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NOVA THIRDY E. AGRAVANTE

PARTICIPATORY DESIGN AND TESTING OF FOOD HANDLING AND ENTREPRENEURSHIP GUIDEBOOK FOR BUKIDNON WOMEN

Thesis Adviser:

BENJAMINA PAULA GONZÁLEZ-FLOR, Ph.D.
Faculty of Information and Communication Studies

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This paper prepared by **NOVA THIRDY E. AGRAVANTE** with the title: "**PARTICIPATORY DESIGN AND TESTING OF FOOD HANDLING AND ENTREPRENEURSHIP GUIDEBOOK FOR BUKIDNON WOMEN"** is hereby accepted by the Faculty of Information and Communication Studies, U.P. Open University, in partial fulfillment of the requirements for the degree Program.

BENJAMINA PAULA G. FLOR, Ph.D. **June 14, 2024**
Chair, Thesis Committee Date

ALEXANDER G. FLOR, Ph.D. **June 14, 2024**
Member, Thesis Committee Date

GRACE J. ALFONSO, Ph.D. **June 14, 2024**
Member, Thesis Committee Date

DIEGO S. MARANAN, Ph.D.
Dean
Faculty of Information and Communication Studies

14 June 2024
Date

Biographical Sketch

Nova Thirdy E. Agravante was born in Cagayan de Oro City, Misamis Oriental and raised in Malaybalay City, Bukidnon, Philippines. She earned her bachelor's degree in Development Communication. She held a position in government service as a college instructor at the DevComm Department of Bukidnon State University (BukSU) for 10 years.

Alongside her teaching, she has documented and facilitated capability development activities for members of the Mindanao Protected Areas Management Board through the extension services of BukSU. She is currently engaged at YOUNGO-ACE Working Group under the UNFCCC, lobbying youth climate initiatives/policy recommendations and other young people across global regions.

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Dedication:

Mommy Ading and the RIC of Barangay Can-ayan

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Abstract

Designing a material with no regard to user's needs become useless in the long run. State universities are mandated to do extension work as one of its functions. Usually, extension materials are developed by extension workers without the participation of its intended users. These materials then do not serve its purpose. Thus, this study on participatory design and testing of a guidebook with the Bukidnon women discovered how a learning material can be carried out from an extension project facilitated by a state university. Following the telling-making-enacting framework, it allowed the participants to empathize with the problems encountered in understanding the message content and design produced by a state university, and defined the problem in a user-centered way. It proceeded to ideating and creating a prototype of its own desired material with the significant role of the designer and non -designers' ideas combined. Exploring participatory design and testing for an improved extension material designed by an intended community yielded positive results when tested by the prospect end-users. Results also showed a unified acceptability, strong agreement on comprehensibility with clear messages in the use of images and texts, provided clear instruction due to the local dialect used, Binukid. Suffice to say that the jointly designed guidebook posed high interest for the next end-users being viewed as an economic and empowering tool in their lives. Hence, participatory design and testing as a method allowed the participants to arrive at agreements on their desired parameters in developing the material. Results as well led to the development of a communication framework for extension workers whose outputs include content and design review report, extension material design plan, extension material, pretesting results, and copyrighted material.

Chapter I

INTRODUCTION

Rationale and background of the study

Women designing materials for women's clubs can ensure that the content, format, and delivery methods are directly relevant and suitable to the interests, needs, and preferences of the members. This tailored approach increases engagement and satisfaction among participants, as the materials resonate more deeply with their personal and collective experiences (Fernandez, Hernandez & Ortiz, 2016).

When women take an active role in the design process, it promotes empowerment and representation within the club. It sends a strong message about the capabilities and leadership potential of women, fostering a sense of ownership and pride among members. This can inspire more women to step into leadership and creative roles within the club and beyond (Reshi & Sudha, 2022).

(Indigenous) women and adult learning have posed a paradigm change from vulnerability to empowerment; indigenous women's learning has been put under the spotlight with the rise of international human rights standard-making and the eventual changing discourses in the field of education (Aikman & Robinson-Pant, 2019). One of the discourses from the Special Adviser on Gender Issues and Advancement of Women and the Secretariat of the U.N. Permanent Forum on Indigenous Issues (United Nations, 2010, p.3) is to facilitate indigenous women participating fully in all areas of their lives. To add, the Commission on the Status of Women has begun to consider indigenous women's empowerment and 'entire exercise of their collective

rights including the right of each person to choose freely their economic, social, and cultural development' (Cited in International Work Group for Indigenous Affairs, 2018).

How do indigenous women in the Philippines enter in the canvass of educational programs and services from the extension projects of state universities?

Extension, as one of the significant exercises in higher education institutions or HEIs, aimed to attain the country's development goals, such as working towards enhancing productivity, generating employment, and reducing poverty through the transfer and application of technology/knowledge to specific sectors and target clienteles and at the same time enhance the higher education institution's academic and research programs (Art. 1 & 3, CHED Memo No. 8 S 2010). The extension programs (e.g., training, seminars, workshops, etc.) must have an integrated approach, such as the training programs and delivery of communication/information services.

Several authored researches on extension programs in state colleges and universities in the Philippines were only focused on, to mention a few: *a)* involvement of students in community extension programs (Lao, 2009; Balila et al., 2016; Rubio et al., 2016; and Ogan, 2019); *b)* constructs, performance, motivation, participation and perspectives of faculty members in their involvement to extension programs (Mojares, 2015; Sedanza, 2018; Santiago et al., 2022;) and *c)* impact studies/impact assessment of community extension programs of the HEIs, effectiveness of extension programs of Philippine state colleges and universities (Quezada, 2014; Llenares & Deocaris, 2018; Sibal & Elizaga, 2019; Villanueva et al., 2019; Salazar, 2020; and Balderama, 2022).

As noticed, studies on the process of participation, involvement, and engagement of partner indigenous communities in the extension programs and services at this time were of little to no avail. Therefore, this study explored the processes of participatory design and testing of an extension material by and for the indigenous communities, especially the women.

Statement of the Problem

The Food Technology Department under the College of Social Development and Technology (CSDT), now College of Technologies (COT) of Bukidnon State University, partnered with an indigenous community in the exercise of its Extension program as one of the core functions of HEI. The target participants were identified as women from the Bukidnon tribe, one of Bukidnon's (province) seven ethnic tribes. During the implementation of the first phase of the extension program, the faculty members made a few slide presentations of the department's extension unit, and no available compiled extension material was formally handed to the target clients of the extension project. It came out that the project must be repackaged to fit better with the present challenges of the partner community, and activities must be made more responsive to their needs. The repackaged extension project included an assessment by the department of the same participants; result showed that 68% of these clients had not received any material during the training on food safety, processing, and entrepreneurship to assist them in their learning (CSDT-Extension Unit Accomplishment Report, 2017).

How should an extension material be produced for this type of community? This study looked at the participatory process of designing and testing an extension material on

food safety, processing, and entrepreneurship, mainly as food handling, for the women of the Bukidnon tribe in Malaybalay, Bukidnon.

Thus, in general, the study aimed to answer the question: How can participatory design and testing of extension materials on food handling and entrepreneurship for indigenous women be carried out?

Specifically, the following questions will be answered:

a. What are the steps or stages in creating an extension material through a participatory process?

b. What roles do women assume in coming up with an extension material through participatory design?
c. What participatory processes have to be put in place to ensure participation of users and stakeholders?
d. How can participatory design and testing of extension material give women from indigenous communities' equal opportunity to address their needs?

Objectives of the Study

In general, the study aimed to determine how the participatory design and testing of extension materials on food handling and entrepreneurship for indigenous women can be carried out.

Specifically, the study sought to:

a. Identify the steps or stages in creating an extension material through a participatory process;

b. Determine roles that women assume in coming up with an extension material through participatory design;
c. Describe participatory processes to be put in place to ensure participation of users and stakeholders; and
d. Develop a framework for participatory design and testing of extension material to give women from indigenous communities' equal opportunity to address their needs.

Significance of the study

The following groups were the beneficiaries of the result of the study:

Community of Bukidnon Women in Barangay Can-ayan. They can claim the extension material as their own because they were engaged in the process of designing and testing the material.

Prospective trainees of the extension project. The extension material served as the most comprehensive learning material to have because it was designed and tested by and for them (indigenous community).

The extensionists of Bukidnon State University. The study led to a framework on how indigenous communities design and test a material. They can use the study in their future designed learning material handed out during project implementation.

The BS Food Technology students. The material served as a reference for subjects on Food Processing 1, 2 and 3 in the revised 2019 curriculum of the Food Technology program. Also, the material will serve as a source of a few *Binukid* terms and phrases used in food safety, processing and entrepreneurship.

The BS Development Communication students. The study served as a reference of future research study relating to participatory design and testing, co-designing with the indigenous communities' type of research.

The neighboring communities/barangays. The material served as a reference for women of the neighboring barangays who shared similar needs.

For development communication. A more systematic and holistic approach on participatory design and testing served as exemplar in coming up with a development intervention.

Scope and Limitations of the Study

This study focused on the participatory design and testing of an extension material on food safety, processing, and entrepreneurship for the women of the tribe of Bukidnon residing in Barangay Can-ayan, Malaybalay City. It sought to focus solely on how an indigenous community designs and tests a learning material for a project implementation conducted by a higher education institution or HEI. Only the women who have completed the training during the implementation of the extension project of Bukidnon State University on food safety, processing, and entrepreneurship were the co-designers of the material, and a new batch of women were the prospective trainees (users) of the same extension project served as the end-users of the designed material.

Chapter II

REVIEW OF RELATED LITERATURE

Participatory Design (P.D.) is a collection of design practices that involve the future users of the design as co-designers in the design process (Velden & Mortberg, 2014). As Brandt, Binder, and Sanders (2010) put it, the heart of participatory design is participation. Designing with and for the communities is a genuine process that establishes strong partnerships with those using the design outcomes (Marques et al., 2018). Wenger (1998) explained that this design process may be complex and combines doing, talking, thinking, feeling, and belonging. Further, it involves the whole person, including bodies, minds, emotions, and social relations. According to King & Schielmann (2004), efforts should be made to have representation of indigenous communities at all levels of decision-making to promote participation by indigenous peoples. This may include participation in the production, review, and approval of educational material, mainly when this material is produced in indigenous knowledge and contains information on indigenous knowledge. Hence, quality indigenous education is achieved.

An example of a successful research design and testing of communication material happened at a social media marketing campaign in Africa titled Breastfeed4Ghana. The study aimed to describe campaign materials' development and testing process to ensure cultural and content appropriateness. The materials consisting of an image and text message underwent a process of creation, testing, revision, and finalization. Most inputs came from focus group discussions. The evidence-informed process of materials creation, multiple input sources, and a broad-

based iterative process allowed the creation of evidence-based and culturally appropriate materials for a breastfeeding social media campaign in Ghana (Aryeetey, Lasisi, Hromi-Fiedler, Carroll, Perez-Escamilla & Harding, 2020

Another, a systematic review on the current state of co-design health research for indigenous and other children and young people from priority social groups was conducted in thirteen countries with 15 studies across East Africa, Europe, and North and South America. Australia revealed that the critical mechanism of addressing equity appeared to include participants from a social group experiencing inequities within an area of interest. A learning from this study (King, Cormack, Edwards, Harris & Paine, 2022) which future researchers can lean upon is to observe culturally safe ethical processes implemented whenever undertaking co-design.

In 2019, a Respectful Design Framework was developed. This framework was structured with a clear focus on co-designing a research project with indigenous communities. Hence, a framework incorporating indigenous knowledge in the design process (Reitsma et al., 2019). The study ensured a central place for indigenous knowledge in the design process, identifying dynamic patterns essential for a respectful design. At the core of the findings (Reitsma et al., 2019) lies the observation that a shared dialogical space between community and designer is essential to reach a respectful design space in which indigenous knowledge is embedded.

In Indonesia, a participatory co-design approach encouraged the collaboration between marginalized communities, government bodies, and a multidisciplinary academic team on a local and traditional learning philosophy of intent to support sustainable development, as industrialization and urbanization have affected the country's rural communities and farming culture. The paper (Utami, Lechner,

Permanasari, Purwandaru & Ardianto, 2022) concluded that including design thinking in a sustainable development strategy based on cultural specificity can increase participation and support traditional indigenous practices and community resiliency.

On the other hand, a study on participatory design and testing for promoting evidence-driven public health decision-making has seen its importance, especially in Liberia. This study (Sinnatwah Jr., Kenneh, Coker, Harmon-Gray, Zankah, Day, Hubbell, Murphy, Izzo, Kong, Sylwester, Long, Bertozzi & Skrip, 2022) was tested on public health practitioners. A prototype mobile game used a disease outbreak scenario to promote evidence-based decision-making in determining the causative agent and prescribing intervention measures to minimize epidemiological and logistical burdens in resource-limited settings. Its main finding is that cultural differences between the game development team and end-users emphasized that they should be an integral part of the design team, especially on the game objectives and mechanics, which were vetted and implemented by game design experts, epidemiologists, and software developers.

One specific research provided background on designing with indigenous knowledge regarding policy and protocols for respectful and authentic cross-cultural representation in communication design practice in Australia. This study created content and structure for a proposed design practice document. The draft document outlines a recommended framework for engagement, including ethical codes of conduct for use by communication design practitioners when undertaking projects requiring visual representation of indigenous culture (Kennedy, 2019). This study also presented workable methods and processes to help practicing designers access and engage appropriately and ethically with indigenous knowledge on projects that involve

the graphical depiction of indigenous culture and national authenticity (Kennedy, 2019).

Many indigenous learners worldwide find the learning materials presented in current educational settings culturally irrelevant (Loewen, Kinshuk, Suhonen & Chen, 2017). This led to a case study of Loewen et al (2017). The study presented the I-SLATE Framework to indigenous knowledge expert interviewees to identify strengths, weaknesses, and additional benefits to the proposed framework. Incorporating learners in the design process from the beginning was highlighted as being a very positive approach. Further, the study provided a prototype of learning materials to allow educators to create relevant and authentic learning for indigenous learners (Loewen et al, 2017).

A study was conducted in the Philippines on designing, developing, and testing an indigenous knowledge management system using mobile device video capture and Web 2.0 protocols. A content management system was designed (Flor, A., Amoloz & Flor, A.B. Jr, 2019) to contain indigenous or local agricultural knowledge through rituals, practices, and others. Among these are the indigenous belief systems, the privacy of indigenous peoples, indigenous knowledge systems (IKS) protocols and their significance of context, prejudice and value judgments among non-IP users, and misinterpretation of indigenous knowledge (Flor. A, et al., 2019).

The related studies fostered the promotion of participatory design and testing of materials for the indigenous communities from emphasizing the importance of the community at the center of the design and testing processes, thus, putting design values in the materials developed. These has helped the study in the ideation of the processes for design and testing of an extension material.

Theoretical Framework

Theory of Design Thinking

This study was anchored to Design Thinking Theory. Design Thinking (Stevens, 2022) is both an ideology and a process concerned with solving problems in a highly user-centric way. For most designers, Design Thinking is effective as a human-centered approach to untapped opportunities and discovering the user's needs and wants (Bongiovanii. 2021). Design Thinking (Tripp, 2013) as a way of igniting and fostering confidence in problem-solvers entails drawing inspiration from '*designerly'* thinking methods and techniques without needing a designer background. These notions were explained by Torabi (2020) in his *Defining 'Design Thinking' – theory and action.* Design thinking is human-centric and influential in helping people envision new opportunities and become comfortable with uncertainty. Hence, it can be applied by regular, 'non-creative' individuals. Design thinking is an approach for innovation, a systematic approach that aims to identify customer dissatisfaction and build innovative solutions through iteration.

As a problem-solving approach, D.T. was therefore attractive to the indigenous community, who was willing to innovate design materials and, hence, become a milestone for owning its design and testing processes.

Conceptual Framework

Participatory Design with Design Thinking

The conceptual framework of this study presented an idea of applying the principles of Participatory Design (PD) referenced from the Routledge International Handbook of

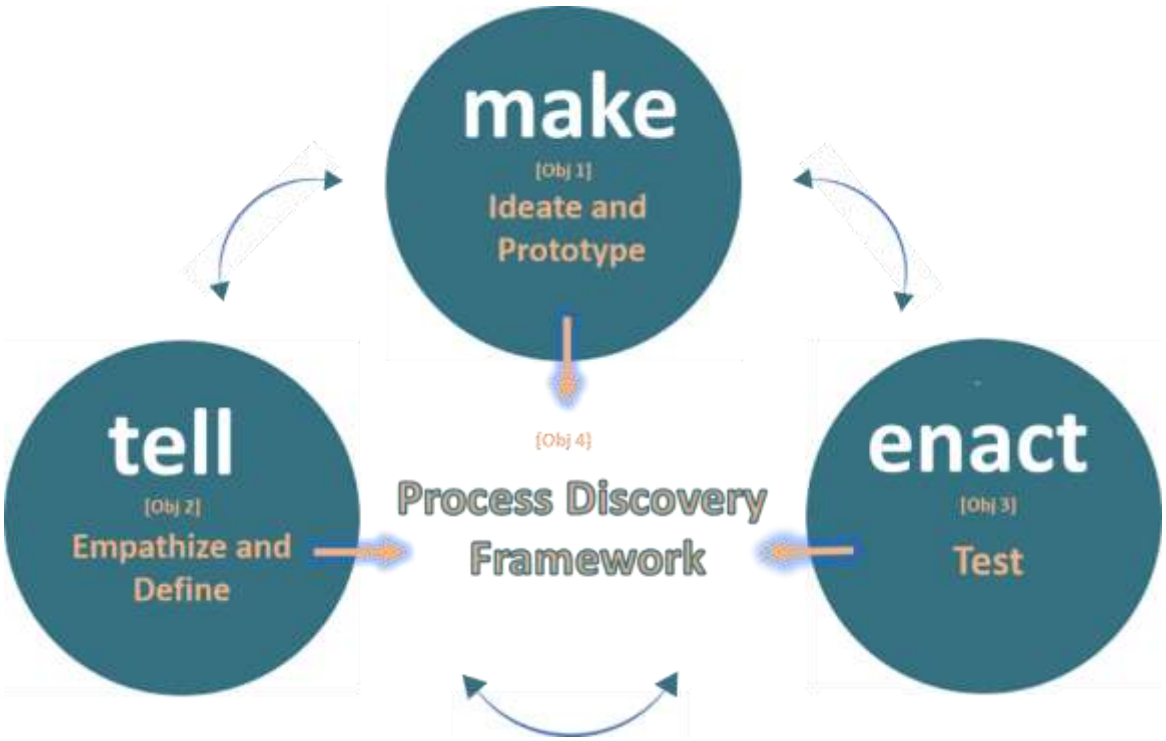
Participatory Design revised by Jesper Simonsen and Toni Robertson in 2016, with an embedded theory of Design Thinking.

The PD framework is a tool or technique within Participatory Design (PD) and tells how designers and non-designers participate in PD practices through activities focusing on *telling, making and enacting* (Brandt, Binder & Sanders, 2010). The sensitivity to the coherence of *telling, making and enacting* provides sufficient grounding for designers (and non-designers) to make the tool and technique relevant to which they are involved in, thus, finding out how these in combination can create format and procedures that can create engagement, common image, and create ownership of the results.

Design Thinking (Stevens, 2022), on one hand, as an iterative and non-linear process contains five phases: 1. empathize, 2. define, 3. Ideate, 4. prototype and 5. test. The five-stage design thinking was proposed by the Hasso Plattner Institute of Design at Stanford. Torabi (2020), described that DT is a systematic approach for innovation, a creativity method, and a mindset, that is based on the principles: *empathy, invention, iteration.* Hence, the three principles will lead to understanding the difficulty and problems of the users for the innovation will be developed (*empathy*), creating something new that does not already exist or that enhances current solutions through imagining and creating rather than accepting the norms (*the invention*), and requiring to test and position the imagined solution for users (*iteration*).

The framework below, the Process Discovery Framework, was created and explored in this study to combine the principles and practices of P.D. and D.T. It sought to achieve the underlying objectives of the study as it trailed along each phase. It facilitated the idea of the discovery of a *process*.

Figure 1. *Process Discovery Framework. Combining the participatory design and design thinking concepts: Tell-make-enact model of Simonsen & Robertson (2016) underlying the design thinking phases and the research objectives.*



The tell-make-enact diagram illustrated in Figure 1 showed that participatory process was a community of practice in the making where participants must be able to make things that give this practice a presence in the world. The participatory practice must be told and enacted to become alive and generative, also of that which is not yet experienced (Simonsen & Robertson, 2016). Along with the tell-make-enact diagram was the embedded phases of design thinking.

Telling Activities as drivers of participation (Simonsen & Robertson, 2016; Brandt et al, 2010)

Participatory Design (P.D.) historically began in one of the Scandinavian participatory design projects in the 1980s, when the union of office workers demanded

participation and democracy in the new work procedures. Study circles were organized to talk about and participate in discussions about how computer systems were best used in the office. The rethinking of systems design called for tools and techniques to achieve transparency of methods in generating a new prototype. This Scandinavian approach emphasized that design should cooperate equally with all stakeholders (designers and non-designers). The productive dialogue addressed the gap between their separate knowledge domains.

- *Empathize and Define*

  Empathy is the ability to understand and share the feelings of another (Oxford New American Dictionary). Gamwell (2020), in his crafted participatory guide for designing engagement, understands what challenges, issues, or problems communities face; participatory design begins with empathy. This means gaining a felt understanding of how stakeholders perceive and feel. The goal of empathizing with others is to get to know a group of people and how they experience a problem or challenge. It asks what they say, think, feel, and do about a particular issue. Dam (2022), this first stage of the process revolves around consultation to discover more about the area of concern and conduct observations to engage and empathize with the users.

  In the *Define* stage*,* organizing and analyzing the information and observations are gathered to define the core problem (Dam, 2022). It collects excellent ideas to establish features, functions, and other issues*.* It is where we dedicate time to define the problems --- gathering all the findings from the empathize phase and making sense of them. We ask

about the difficulties and barriers the users are coming up against. Observing their patterns and identifying the big user problem that needs to be solved are being considered. By the end of the define phase, the users must have the problem statement framed as user-centered.

According to Torabi (2020), a story has a narrative that involves emotions, enabling people to understand issues and create engagement. Storytelling is the human way of conveying information. Moreover, since design thinking was human-centered, these process phases needed storytelling.

As noticed in the framework, the study's attainment of objective #2 was embedded here. Determining the roles that women assume during the focus group discussion were observed and recorded. In this study, the telling activities through discussions provided background information on the barriers and challenges of the existing material, along with context opportunities in the design of the extension material. Discussions were centered on their experiences and what would turn out in the talks, and the decision-making process has assisted them in determining the new procedures for designing an extension material for their community.

The making of things as a means of design participation (Simonsen & Robertson, 2016; Brandt et al, 2010)

Providing tools for making gave the people the ability to make “things” as mentioned in the Handbook, and realized by organizations who applied PD approaches such as the (a) cooperative prototyping of UTOPIA projects in the 1980s, (b) cultural probes as a means of exploring experience through probing kits in the form of postcards, diary book and instant cameras, and (c) generative tools for co-designing such as image collaging and cognitive mapping. These examples of design

development approaches were examples of priming activities to ensure that the participant was prepared for the creativity that was inherent in them.

- *Ideate and Prototype*

  Ideation is the process of strategically coming up with various ideas and possible solutions to the problems identified in the empathy and define phases (Gamwell, 2020). *Ideate* mode (Introduction to Design Thinking, 2011) is a mode during the design process which focuses on idea generation. Mentally it represented a process of “going wide” in terms of concepts and outcomes – it was a mode of “flaring” rather than “focus”. The goal of ideation was to explore a wide solution space – both a large quantity of ideas and a diversity among those ideas. Further, we ideate in order to transition from identifying problems into exploring solutions for the users. Torabi (2020) referred the duration of this phase as abstract and imaginative, that it needed focus and it was intense.

  Prototyping is getting the ideas and explorations out of the head and into the physical world (Introduction to Design Thinking, 2011). A prototype can be anything that takes a physical form. Prototypes are most successful when designers, non-designers, and users can experience and interact with them. We must prototype for empathy gaining, exploration, testing, and inspiration. This is also cited by the Interaction Design Foundation on its advantages of prototyping: it will have a solid foundation from which to ideate towards improvements, it can provide feedback when the prototypes are tested to help pinpoint

which elements work best and whether an overhaul is required, and it gives a sense of ownership to the concerned stakeholders.

Ideation and prototyping were the identified ways on how we were able to make things. In the practice of design thinking, there were methods which made helpful in the physical renderings of a proposed solution, the creation of the designed material (referred to the achievement to objective #1). It may be in the form of storyboarding, moodboards, space creation, wireframes and mockups and paper prototypes. In this study, the making of things provided creative opportunities to the participants in coming up with their material. Generative tools for co-designing were applied, and the generated designed material determined the processes of how indigenous women made things (materials) for them.

Participation through enacting possible futures (Simonsen & Robertson, 2016; Brandt et al, 2010)

Enacting refers to activities where one or more people imagined and acted out possible futures by trying things out in settings resembling or where future activities were likely to occur. What was enacted in the situation can be made beforehand. It can also be solely based on improvisation and experimentation in the situation. The Handbook identified enacting techniques such as improvisational theatre techniques, scenarios, staging performances with props, mock-ups and/or prototypes, and enacting scenarios in real-use contexts.

- *Test*

  Testing (Introduction to Design Thinking, 2011) is the chance to refine the solutions and make them better. The test mode was another iterative mode in which we placed our low-resolution artifacts in the

appropriate context of the user's life. Prototype as if you know you were right, but test as if you are wrong. Testing was done to refine the prototypes and solutions, to learn more about the user, and to test and refine the point of view (realization of objective #3)

Having users improvise in their environment brought the experiences as close as possible to exploring how everyday activities could differ (Brand et al., 2010). This study applied scenarios in real-use contexts, and how the designed material was enacted led to the explanation of how women in the indigenous community utilized and tested an extension material.

Operational Definition of Terms

Participatory design	An approach for material development that involves the end-user's participation in the multiple stages of designing.
Testing	Refers to the pretesting phase of the designed material. This is executed by the prospective end-users (future extension project trainees).
Extension Material	The development material which is designed and pretested with and for the indigenous community. It is a self-learning material.
Food Handling and Entrepreneurship	The general collective term for food safety and processing, and entrepreneurship. Also refers to the training of the extension project for the Bukidnon women.
Indigenous Women	The women of the Bukidnon tribe who have completed the training. Would also refer as the co- designers, and the prospective users of the extension material

Users	Refers to the women who have completed the training who will utilize the extension material
Designers	Refers to the FGD participants who will be actively engaged in the telling, making, and enacting activities
Tools and techniques	Refers to the tell-make-act activities during FGD
Focus Group Discussion (FGD)	Main activity and method used in data gathering

Chapter III

METHODOLOGY

Research Design

This study employed an experimental research design. It implemented two main phases: (a) *Review.* The material made available during the training was shown for a review to the trainees; and (b) *Participatory design and testing with and for the indigenous community.* Developed a material that the users can claim as theirs (how they would like the material to be), and pretested the material to the prospective trainees.

Participatory design is a product design approach that brings the users to the design process (Berga & Gomes, 2021). It involved the active participation of several people by integrating their various views and perspectives in the design.

Locale of the Study

A. Geographic Profile

Barangay Can-ayan is found in the western part of Malaybalay. It is only about seven (7) kilometers from the urban center of Malaybalay City.

The barangay is composed of five (5) *puroks* and seven (7) *sitios* with a total land area of 13,090 hectares. At the same time, it has 10, 189.18 hectares are classified as Forest Land and the remaining area of 2,228.24 hectares is classified as Alienable and Disposable. It is bounded on the north by Barangay Kibalabag, in the south by

Barangay San Jose, in the east by Barangay Mapulo and in the west by Barangay Sumpong. The terrain is flat and mountainous and the soil is clay loam.

B. Environmental Profile

The current land uses of Barangay Can-ayan are classified as residential, commercial, institutional and agricultural. Approximately 501.58 hectares or 88.33% of the total land area is agricultural land and only about 60 hectares or 9.97% is residential (Barangay Development Plan, revised 2017).

Respondents of the Study and Sampling Procedure

This study mainly involved the designers and the testers of the material. They were specifically identified as recommended by the Office of the Extension Unit of the University and the barangay.

The subject respondents of this study were:

1. the women who have completed the training during the implementation of the extension project of Bukidnon State University on food safety, processing, and entrepreneurship as the designers of the material; and
2. the women who will be the prospective trainees of the same extension project as the testers of the designed material.

The Research Instruments

Three distinct types of questionnaires were prepared to reach the study's objectives. One for the trainees during the *Review Phase* (Type A Questionnaire). Type A questionnaire (for the trainees who have completed the training) gathered reviews and comments on the entire design and package of the existing material

regarding the instructions message content, and design. The two others were for the *Design and Testing Phase by and for the indigenous community* (Type B and C Questionnaires). The Type B questionnaire (for the designers) was filled with views and perspectives on how they would like the material. Finally, the Type C Questionnaire (for the testers of the designed material) required them to pretest the designed material.

Data Gathering Procedures

The study was conducted face-to-face and with observation of the COVID-19 protocols.

The collection of information from the different questionnaire types was separated into schedules for each approach. Type A and B employed a focus group discussion (FGD) among the trainees and designers, and participation was required in the FGD sessions. For Type C, pretest results were gathered from the testers' FGD.

Data Analysis

Different types of data analysis were applied in this study:

For Focus Groups under Type A, data were analyzed using micro-interlocutor analysis. This method (Onwuegbuzie et al., 2009) allows the researcher to record information not only from active FGD participants but also from focus group participants who are less articulate, members who tend to accept decisions without any protest to the majority viewpoint, and members who are not allowed to speak. Thus, this method assessed the level of consensus and dissension of the focus group

as a unit. The following annotation was used as borrowed from Onwuegbuzie et al. (2009):

A = indicated agreement (i.e. verbal or nonverbal)

D = indicated dissent (i.e. verbal or nonverbal)

SE = provided significant statement or example suggesting agreement

SD = provided significant statement or example suggesting dissent

NR = did not indicate agreement or dissent (i.e., nonresponse)

For Focus Groups under Type B: data were analyzed through identifying the major themes, organizing of the data, and interpreting the themes and ideas in context.

For Focus Groups under Type C: data were analyzed through Micro-interlocutor Analysis.

Chapter IV

RESULTS AND DISCUSSION

Socio-demographic profile of the participants

The focus group discussion began by asking the participants to write on a sheet provided for their age and civil status. Table 1a presents the socio-demographic characteristics of the participants, the first part of the result. The participants were women identified by the RIC president. Their age ranged from 28-56. Among them, only one was widowed, and the remainder were married.

Table 1a. *Socio-demographic characteristics of the participants*

Variable	Frequency	Percentage
Age		
20-29	1	20
30-39	0	
40-49	1	20
50-56	3	60
Total	**5**	**100**
Civil Status		
Single	0	
Married	4	80
Widow	1	20
Separated	0	
Total	**5**	**100**

[Objective 1] **Steps or stages in creating an extension material through a participatory process**

Telling Activity

Step 1: Review Phase

The participants began their sharing/storytelling after being allowed to review the existing materials prepared by the BukSU Food Technology Department extensionists in 2017. The objective of the discussion was to generate reviews and comments that captured their opinions and evidence supporting their opinions on the entire design and package of the existing material utilized during the training for women on Food Safety, Processing, and Entrepreneurship.

Questions were asked one by one. The participants responded to the question either verbally or non-verbally. The discussion was annotated by a documenter using the micro-interlocutor analysis (Onwuegbuzie, et al., 2009).

A = indicated agreement (i.e. verbal or nonverbal)

D = indicated dissent (i.e. verbal or nonverbal)

SE = provided significant statement or example suggesting agreement

SD = provided significant statement or example suggesting dissent

NR = did not indicate agreement or dissent (i.e., nonresponse)

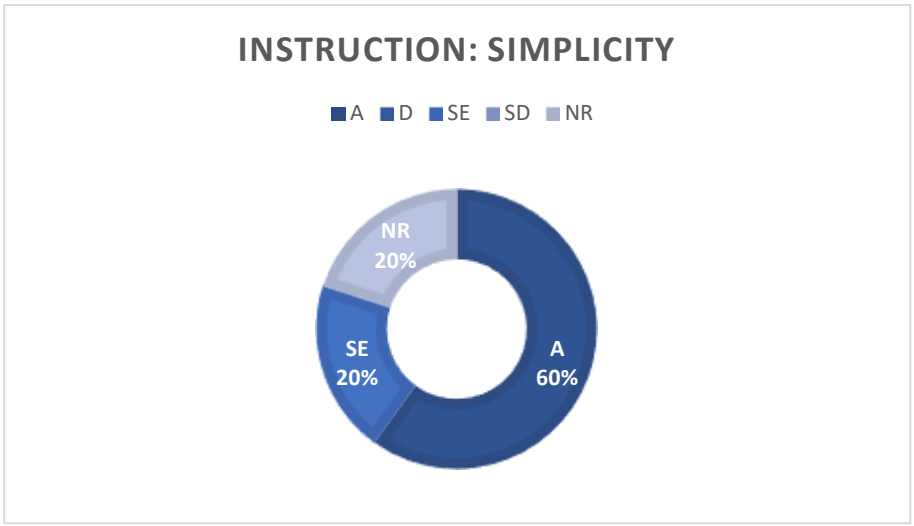
The review phase considered aspects of instruction, attractiveness, comprehensibility, and acceptability/appropriateness of the materials.

A. Instruction

Below is the summarized and detailed impression under instruction as participants took a look at the aspects of: simplicity, comprehensibility, completeness, and consistency or logical construction.

Figure 1. *Summarized impression under instruction*

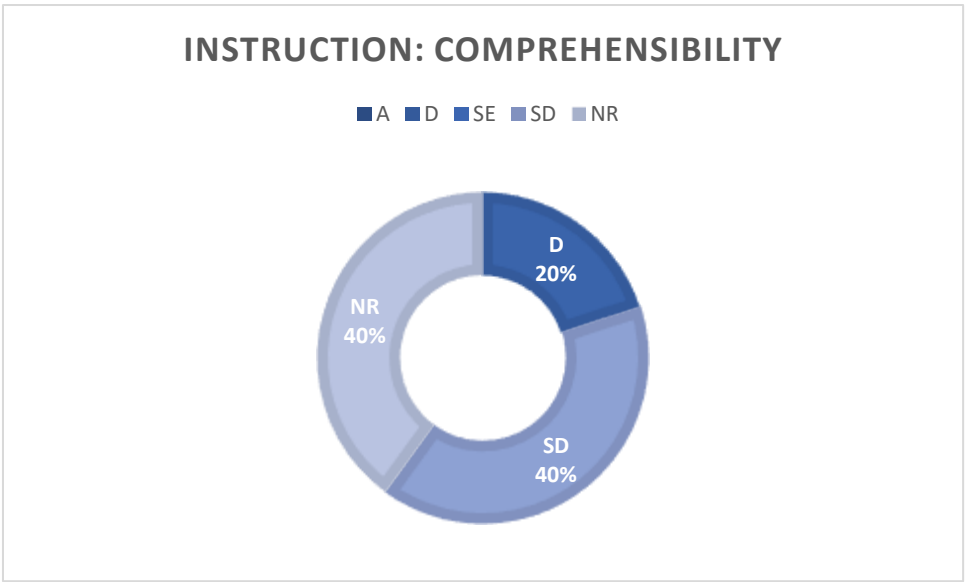
Figure 2. *Are the instructions of the materials simple to understand?*



Three participants agreed that the instructions of the materials were simple to understand, while one did not indicate agreement or dissent. However, only one participant supported her agreement on the simplicity of the instruction by emphasizing that specific materials were more straightforward to understand among others:

> Participant no 2. *"Mas simpli sabton ang material sa hygiene."* The material on hygiene is more straightforward to understand.

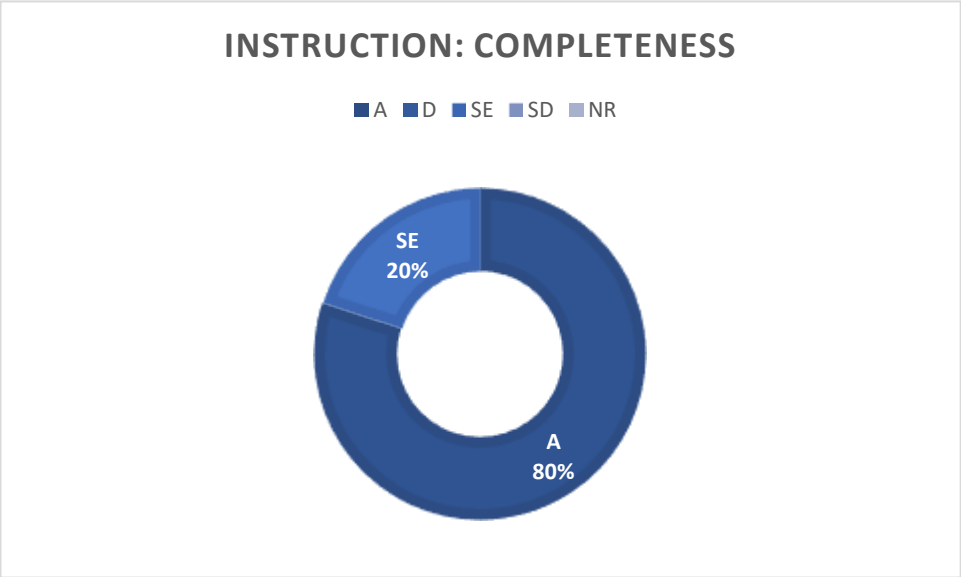
Figure 3. *Are the instructions of the materials complicated to comprehend?*



However, one participant stated that the comprehensibility of the material may depend upon the receiver of the information.

> Participant no 2. *"Wala sila (ang uban) kabalo sa saktong proseso kay wala man sila sa seminar. If ihatag or ishare lang ang material sa lain, komplikado sabton."* Others do not know the exact procedures because they were not included in the seminar. If the material will be loosely shared or given to others, it will be complicated to comprehend.

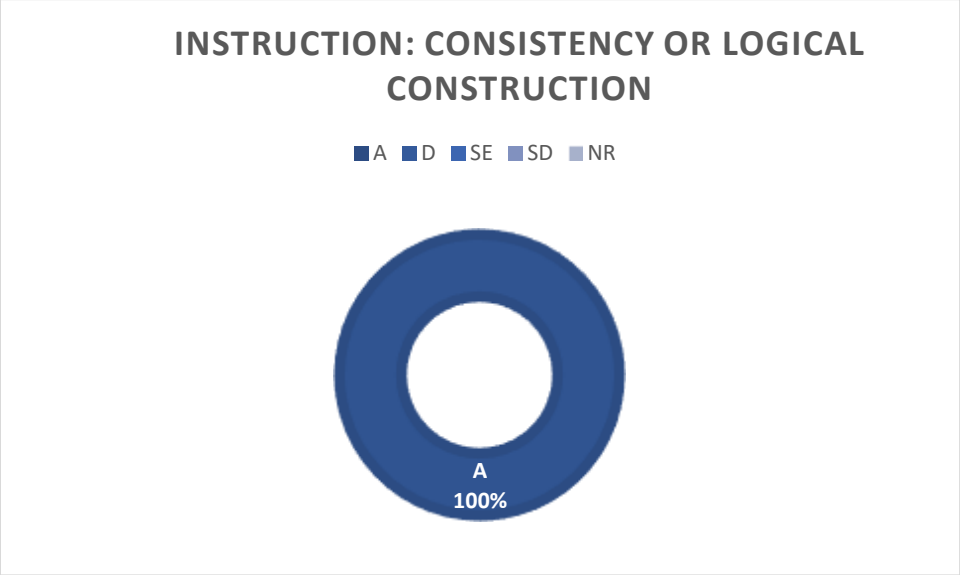
Figure 4. *Are the instructions complete?*



Four of the participants expressed that the instructions were complete, while, one participant supported her agreement by adding a suggestion that:

> Participant 2: *"Need pa i-explain gyud og tarong ang uban handouts like sa keeping/cashflow."* There is a need to explain more in some of the handouts like keeping (record keeping)/cashflow.

Figure 5. *Are the instructions placed consistently at the right place?*



When participants were asked if the instructions were placed consistently at the right place, all of them expressed their agreement.

B. *Attractiveness*

Figure 6. *Summarized impression under attractiveness*

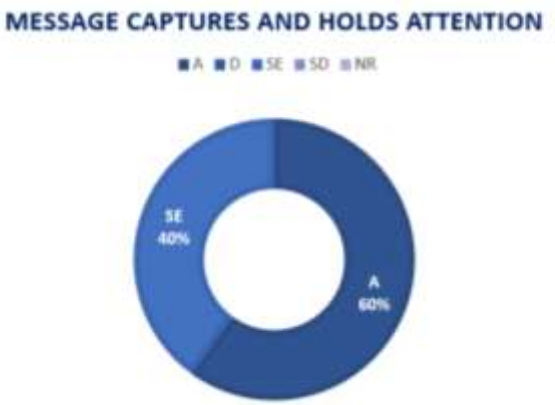
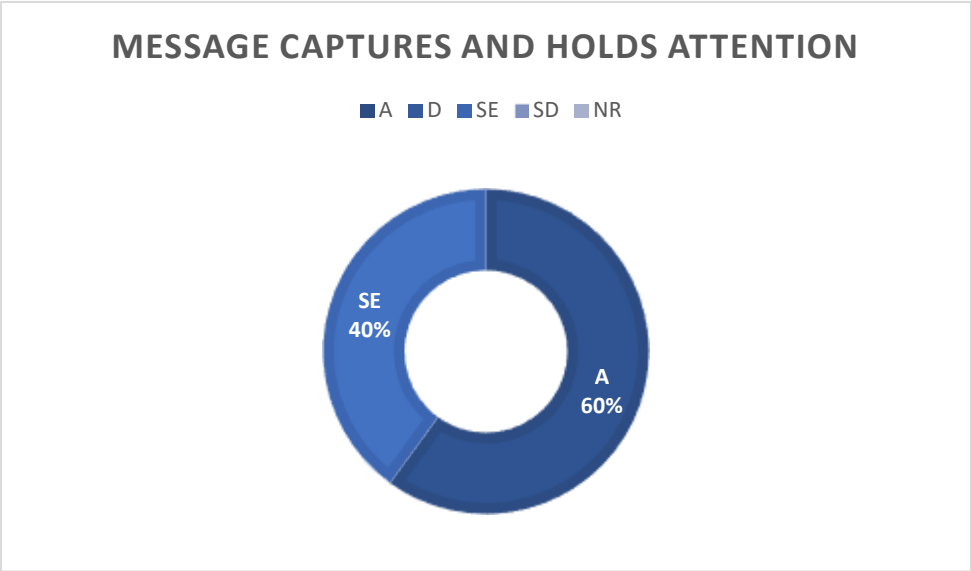


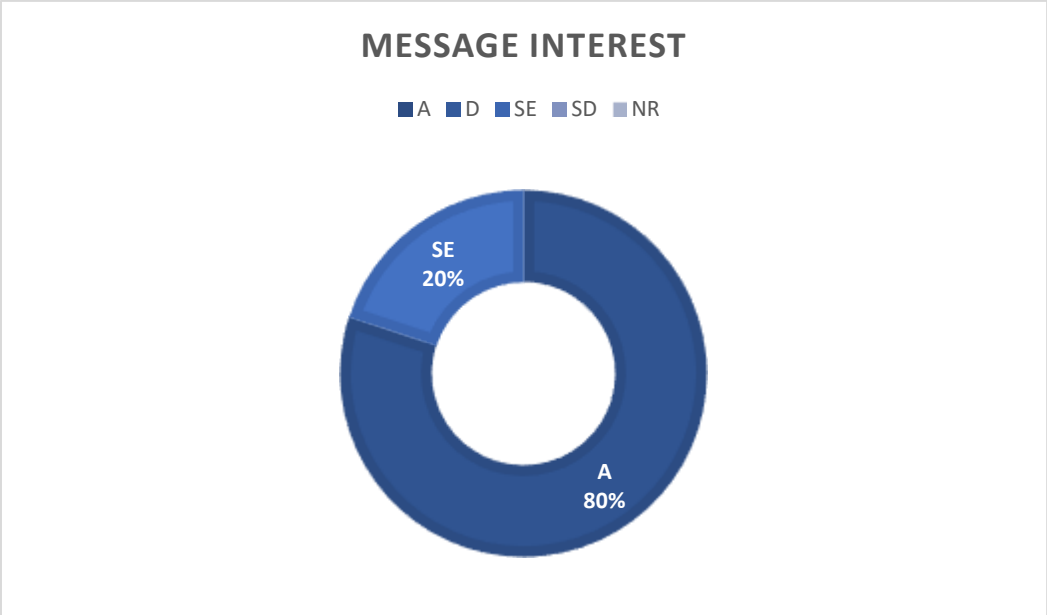
Figure 7. *Does the message (content and design) capture and hold attention of the learners?*



All participants agreed that the message (content and design) captured and held attention to the learners. Two of them provided the same perspective, their statements:

> Particpant no. 2 *"Naay mga pictures maong masabtan."* Pictures are illustrated, which is why they can be understood.
>
> Participant no. 3 *"Naay pictures dali ra masabtan kay makita man.* There are pictures; it is easily understood because they are shown.

Figure 8. *Is the message design interesting to them?*



All of the participants agreed that the message design was attractive to them. However, one of them provided an important observation which affected the participant's interest to the material:

> Participant no. 4 *"Sa text dili maklaro. Padak-a ang letra."* The texts are not explicit. Increase the size of the letter.

C. Comprehensibility

Figure 9. *Summarized impression under comprehensibility*

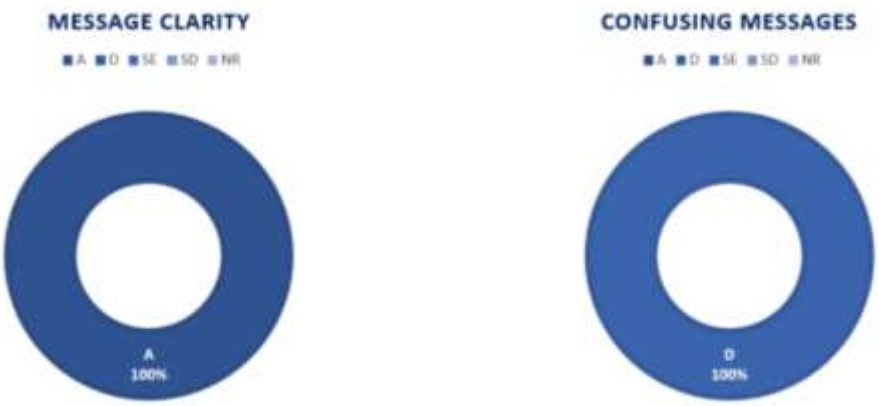
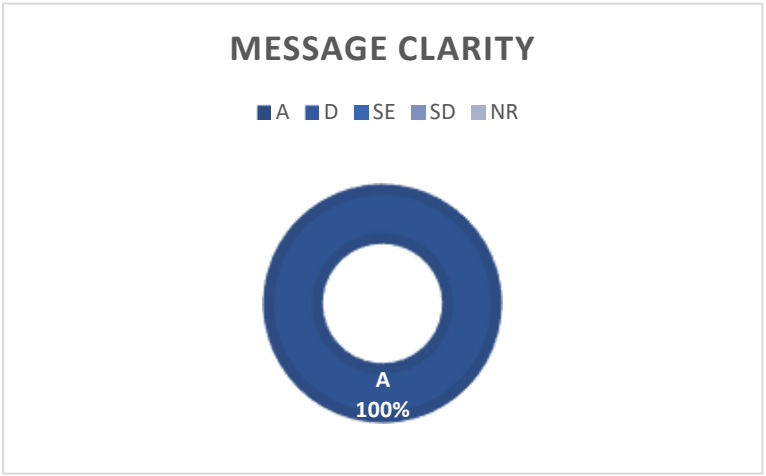
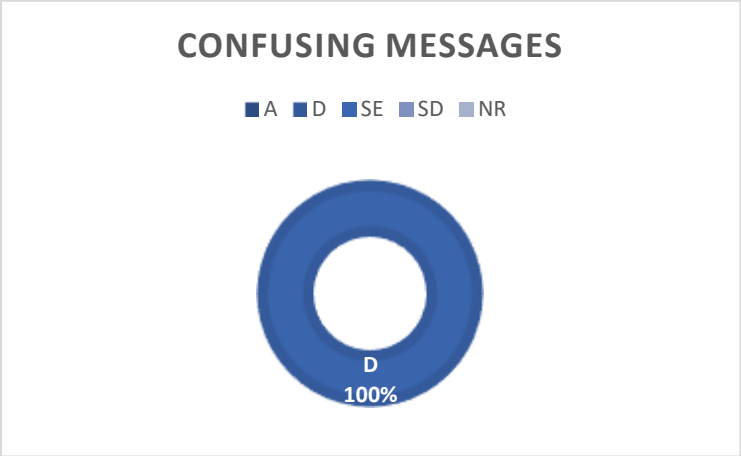


Figure 10. *Is the message (content) clear to the learners?*



The participants agreed that the materials' message content was explicit to them. They were further asked to identify how the materials were explicit to them; the participants had no further discussion about it.

Figure 11. *Is there anything in the design (e.g., layout of visual and verbal cues, colors, contrast) that makes the content confusing?*



The participants showed disagreement that the messages are confusing for them and have no conversation about it.

D. Acceptability/Appropriateness

Figure 12. *Summarized impression under acceptability/appropriateness*

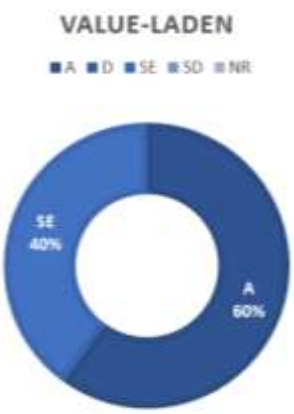
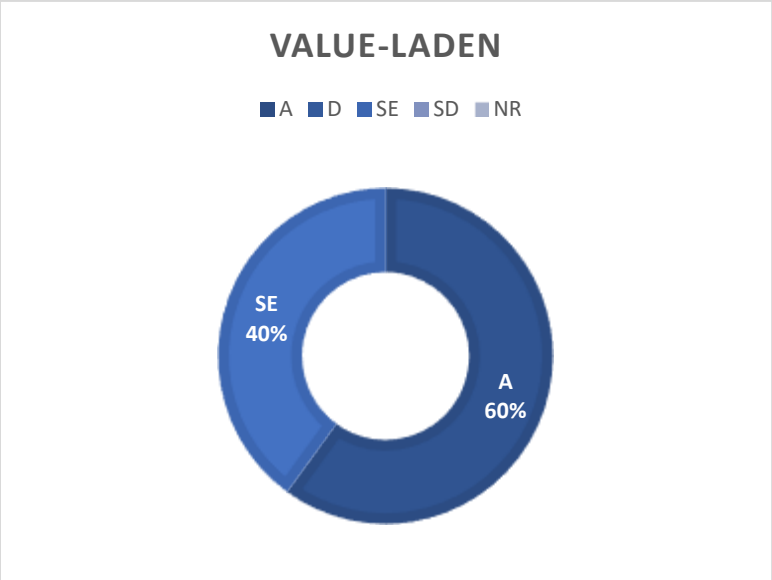


Figure 13. *Does the message content support or strengthen the values that the learners hold dearly?*

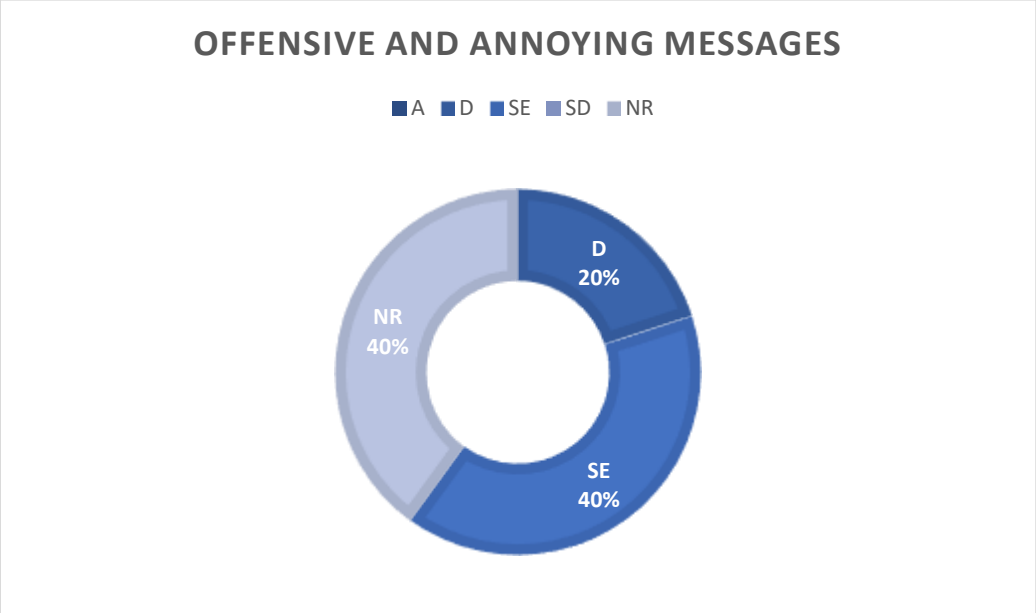


All of the participants expressed their agreement that the message content had strengthen their values. These were the examples cited by two of them:

> [Financial support for the family]
>
> Particpant no. 1 *"Naka-labor sa pagluto maong nakatabang kini sa among pamilya in terms of money."* We are paid for the labor in cooking, which is why it has helped our family in terms of money (financial concerns).

> [Practicing sanitation in preparing food]
>
> Participant no. 2 *"Naagi sa seminar, nasunod namo ang saktong proseso sa pagluto nga dapat limpyo una ayha mag luto."* We were trained through the seminar; thus, we have followed the right procedures in cooking such as we must clean first before we cook.

Figure 14. *Is there anything in the message (content and design) that offends or annoys the learners?*



When participants were asked if offensive or annoying messages were found in the material, one participant disagreed that parts of the message offended or annoyed them, and two were non-responsive. The last two agreed that there were sections that annoyed them. These were the instances cited:

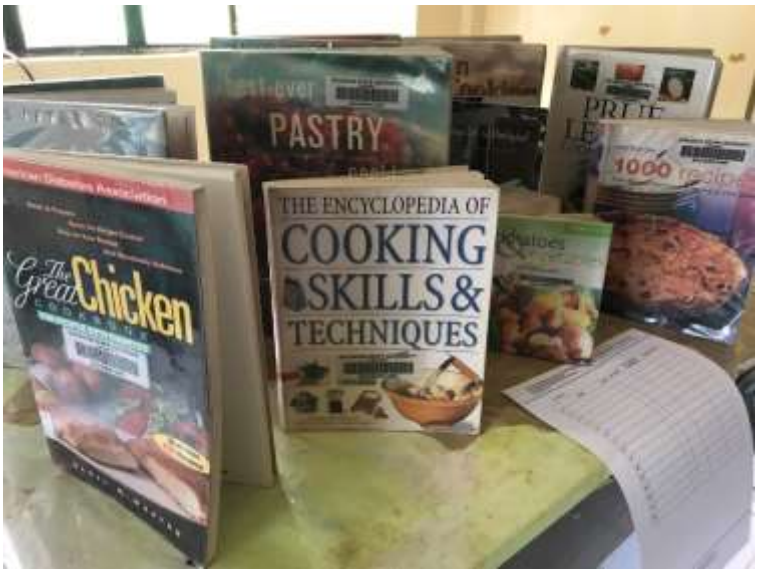
> Participant no. 4 *"Nisunod sa process pero wala namao sa realidad."* Followed the process but it is far from reality.
>
> Participant no. 5 *"Di masunod usahay ang gusto nga outcome sa pagluto."* Sometimes, it did not follow the desired outcome from how I cook.

Making Activity

Step 2: Design Phase

This phase applied the theories of Design Thinking and Participatory Design which mainly emphasized the roles of the designers and the non-designers in undertaking design. The facilitators and the documenters took the role as aides, identifiers of design principles and elements in the designing process, while, the participants take the role as co-designers which is participatory by design.

By having them exposed to different cookbooks or cooking guides available in the BukSU Library, the participants were encouraged to explore. The main objective of this exposure was to provide the participants with an avenue to discover how a cooking guide was designed. With the objective given, Participant No.6 took the role of guiding the rest. Procedures were documented by the main facilitator and materials were provided when needed:



Picture 1. Sample cook books/guides available in the university library for exploration of design among the participants

Step 1: The group has decided that all of them will pick one book to explore. While looking at the pages, participants sought cue cards from the facilitator to insert these cards within the desired page of the book/guide. The page where an inserted card was placed meant they would also like to see it in their future material similarly. This particular step was time-limited for an hour.

Picture 2. Cue cards (in pink) were inserted within the pages to indicate as prompters in their later discussion

Step 2: After each one has explored the book and inserted card within the pages, Participant No. 6 called up the group to show their pages, one by one and they have discussed the sections/parts of the book/guide why they like it, what interests them, and how they would like it to be better in their future material until consensus was reached. This step was not time limited; participants were given the freedom to discuss while being documented. However, in their case, the discussion lasted for almost an hour.

Picture 3. Discussion on the desired pages identified by the participants

Note: The language used during their discussion was the Binukid language, Participant No. 6 took the lead in translating it to the facilitators and documenters into Binisaya. Below are the discussion notes highlighting the themes the facilitators identified when designing their material.

Procedure

Participant No. 6: "*Gipakita ang mga gamit sa pagluto. Dapat makita sya sa libro sama sa planggana, kutsilyo, chopboard, kawa, timbangan".* The materials needed for cooking are illustrated. In our book, we must also show the needed materials, such as the basin, knife, chopping board, cauldron, and weighing scale.

- *"Makita ang steps, kung unsay una gihimo. Una sa pagtimbang sa saging, paghuman hugasan ang saging, dayon pagkahuman og hugas, magpanit napod dayon. Hugasan napod dayon ang gipanitan ayha slice-son."* It is found

through the steps on what to do first. First is on weighing the bananas, and then washing it and then peeling. Wash the peeled banana before slicing.

- *"Paghuman og slice, didto napod sa pagluto. Hugasan una ang kawa, luwag, limpyuhan tanan, apil ang salaan. Paghuman og luto, ibutang sa manila paper kay ang paper musuyop sa mantika."* After slicing, it is set for cooking. Wash the basin, ladle, everything, including the strainer. After cooking, placed it (fried bananas) on the manila paper to absorb its oil.

- *Walay timer among pagluto, ang kakusgon sa kalayo among lantawon ug buakon namo ang saging kung crispy ba jud siya.* There is no timer in our cooking, instead we depend on the amount of heat and then break a slice of fried banana to know whether crispy or not.

Images

Participant No. 3*: "Ipakita dapat ang dagway sa saging, giunsa pag panit, hugas, slice, giluto."* It must show the image of a banana, how it is peeled, washed, sliced, and cooked.

Participant No. 2: "*Dapat ang pagka picture klaro kaayo."* Pictures captured must be clear.

Size of the book

All participants: "*Dili dapat gamay, dili pod dapat sobra ka dako."* It must not be small, not too big too.

Participant No. 6: **shows sample book**

Titling of the Book

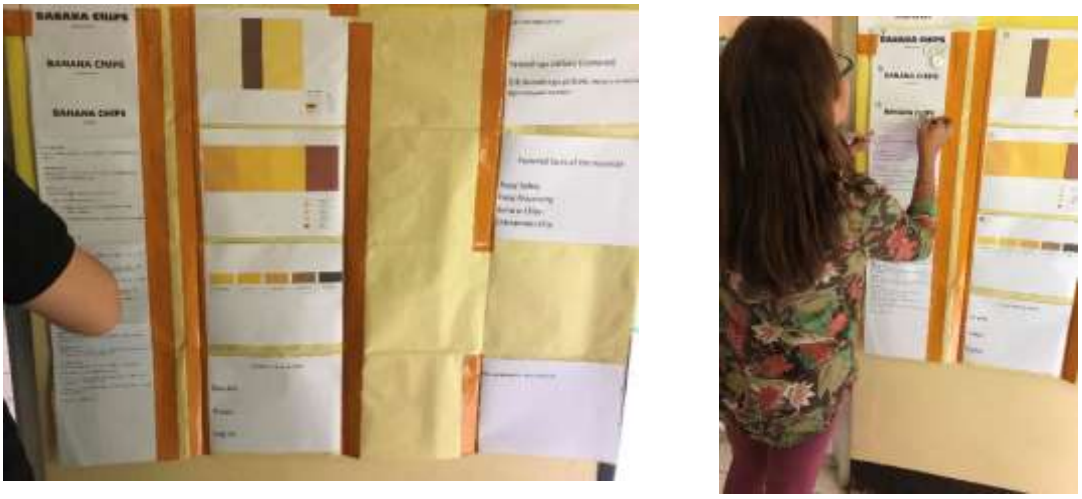
Participant no.7: "*Dapat naa jud title."* There must be a title.

Colors

Participant No. 6: "*Dapat bantayan ang color sa saging. Dapat katong color sa hilaw na saging. Kay kung hinog, dili mu crispy. Lahi pod ang lami sa hinog ug hilaw na saging."* We must be cautious about the color of the banana. It must be the raw color. If we choose the ripe color, it will not turn out as crispy. Also, the taste differs between ripe and raw bananas.

Step 3: Next, the facilitators and documenters (acted as co-designers in the process) gathered the participants to select and identify the (a) desired font (style and style) for the heading and body texts, (b) color palette, (c) language, (d) photos/images/graphics, (e) faces to include in the materials and the (f) people to acknowledge (acknowledgement) in a specified page to suffice the design of their material.

3a. The facilitators placed a large paper to a wall. The paper contained an activity by which each participant will decide for every item by putting a check mark to which among of the items they do like.



Picture 4. Activity board for participants to select and identify desired design for every design element

Below are the participants' consensus per design element results and some critical notes from the discussion.

a. *Font (for Title/Heading)*

BANANA CHIPS

Segoe UI Black

b. *Font (for Body Texts) and Size*

MATERYALES:
Kutsilyo, kalaha, kutsara, kahoy nga luwah, yahong ug plato, packing cellopane

Cascadia Code – 16

c. *Color Palette (Orange Yellow, Metallic Yellow, Banana Yellow, Coconut)*

d. *Language (In order: Binukid, Cebuano, English)*

Participant No. 6 *"Kay ang uban dili kasabot og english, naa pod uban di kasabot Binukid. Pero mas maayo japon kung tulo kabuok gamiton."* Some cannot understand the English language, others cannot understand the Binukid. It is better that those three (languages) will be used.

Participant No. 7 *"Lumad mi. Dapat ipaglaban nato atong pinulongan. Dapat di wad-on ang Binukid. Mas maayo mabutang siya sa libro."* We are lumads. We must fight (preservation) for our language. It is better that it must be there in the book.

e. *Photos/Images/graphics (Real photos/images and graphics freely downloadable from the web)*

Participant No. 6 *"Ang picture sa utensils, dapat sa internet nalang kwaon. Ang saging lang ang tinuod na picture."* The images for utensils must be taken from the internet instead. Only the bananas are taken as authentic images.

f. *Faces will be included in the material (Every one of them will help in the entire process; they will be featured).*

g. *Acknowledgement*

- Bukidnon State University
- NTFP-Philippines
- Barangay Can-ayan RIC since 2017

Step 4: Layout. Laying out of the material carrying the results. The results of step 3 were applied in the design of the material.

Step 5: Shoot. Shots were taken to provide original images and graphics in the performing the processes/procedures of banana chips production.

Step 6: Selection of Photos. The co-designers carefully selected photos to insert in the material.

Step 7. Drafts of the layout of the material were presented to the participants, and as per the request of the group, the use of the Binukid language was proofread by the Indigenous People Mandatory Representative (I.P. Mandatory Representative) of Barangay Can-ayan. This was made to evaluate if all the agreed-upon decisions were evident in the design. **The design of the material is attached in the appendix of this paper**

Step 8. Printing of the material.

Step 9. Pretesting the material.

Step 10. Pretest results were analyzed.

Enacting Activity

Step 3: Pretesting Phase

The pretesting phase allowed the non-members of the club/prospective trainees to test the existing materials designed by the club members, the completers of the training for banana chip production. The objective of the discussion was to evaluate the material and capture their opinions and evidence supporting their opinions on the entire design and package of the newly designed material.

Questions were asked one by one. The participants responded to the question either verbally or non-verbally. The discussion was annotated by a documenter using the micro-interlocutor analysis (Onwuegbuzie, et al., 2009).

A = indicated agreement (i.e. verbal or nonverbal)

D = indicated dissent (i.e. verbal or nonverbal)

SE = provided significant statement or example suggesting agreement

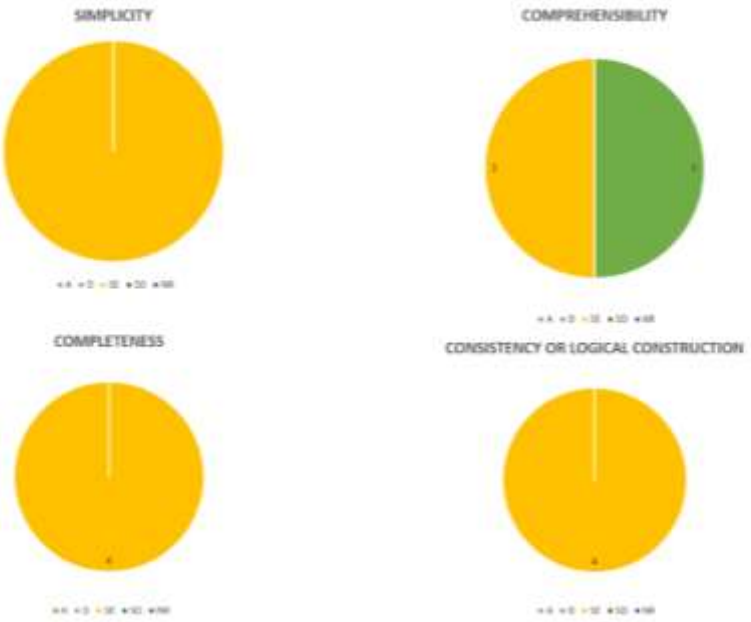
SD = provided significant statement or example suggesting dissent

NR = did not indicate agreement or dissent (i.e., nonresponse)

In the pretesting phase, the aspects of instruction, attractiveness, comprehensibility, and acceptability/appropriateness of the materials were discussed.

A. Instruction

Figure 15. *Post-test: summarized impression under instruction*



The figure above shows that all participants agreed that the designed material was simple, understandable, complete, and consistent/constructed logically. Below are the supporting statements of the participants:

Simplicity of the material

Participant No. 3 "*Walay parte nga lisud sabton."* There are no parts difficult to understand.

Participant No. 4 *"Simple ra kay masabtan, walay komplikado nga intructions."* It is simple because we can understand, there are no complicated instructions."

While all participants agreed the material was comprehensible, two expressed that the Binukid language used in the designed material aids in getting the instructions right.

Comprehensibility of the material

Participant No. 1 *"Posible nga masabtan kay ang gi-gamit binukid sayon kaayo sya."* It (the material) can be possibly understood because the language used is Binukid, it is easy.

Participant No. 2 *"Dali ra masabtan tanan kay binukid ang gi-gamit. Kay kung mag english lisud sabton"* Everything is easy to understand because the language used is in Binukid. If it was in English, it can be difficult.

All of the participants agreed that the material for them was complete. Two of them stated that they had nothing to add more for the material. However, for the rest, participants 1 and 2 spoke about completeness.

Completeness of the material

Participant No. 1 *"Okay naman wala koy nakita nga kulang."* It is okay, I have nothing anymore seen as lacking.

Participant No. 2 "S*a akong pagtan-aw sa papel, kompleto naman kay makita man jud tanan."* As I looked the paper (material), it is complete because everything is illustrated.

All participants agreed that the instruction of the material was consistent and logically constructed.

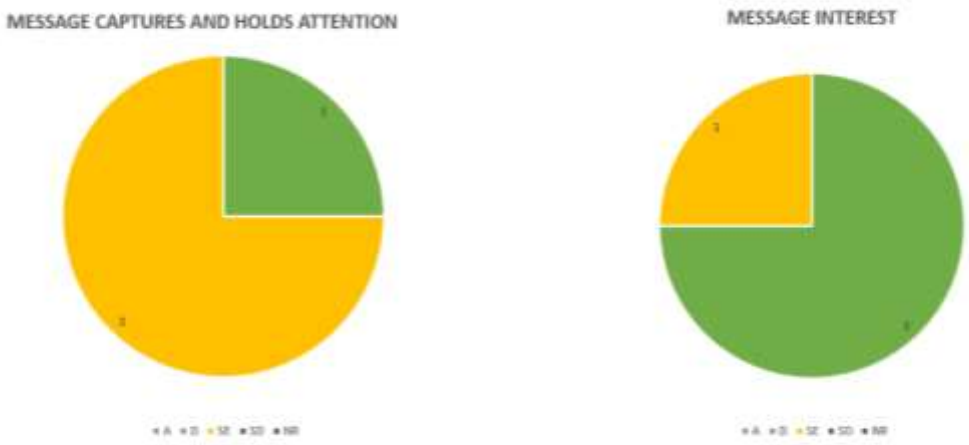
Consistency/logical construction of the material

Participant No. 1 *"Okay ra kay na step by step man jud pagka himo."* It is okay because the illustrations show the step by step.

Participant No. 2 *"Walay nasalaag nga instruction."* No instruction at lost.

B. Attractiveness

Figure 16. *Post-test: summarized impression under attractiveness*



The figure above summarized the impression of the participants towards the designed material. All of them found the material to be attractive as it was shown that the message captured and held attention to them, and the message was interesting for them. Below were the highlights of impression:

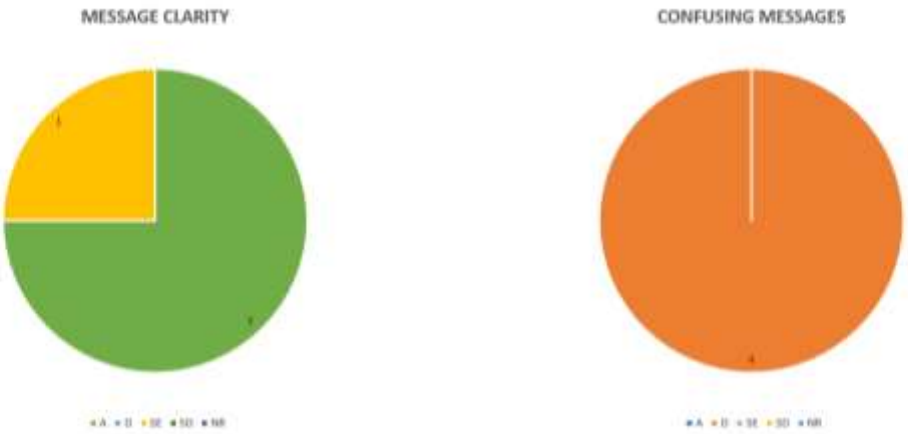
Participant No. 1 "*Interesting kay bisag bata makakita, masabtan gyud sa pagka sulat pa lang daan, ma-interesado na ang mga tao, sa language pa lang daan maka-hatag nag kalipay."* It (material) is interesting because even a kid who will see this material,

it can be understood from the way it is written; it will spark interest to individuals, even the language used bring us joy.

Participant No. 2 *"Dali ra gyud makuha para sa amoa mga lumad."* It is very easy for us, the lumads, in getting the message right.

C. Comprehensibility

Figure 17. *Post-test: summarized impression under comprehensibility*

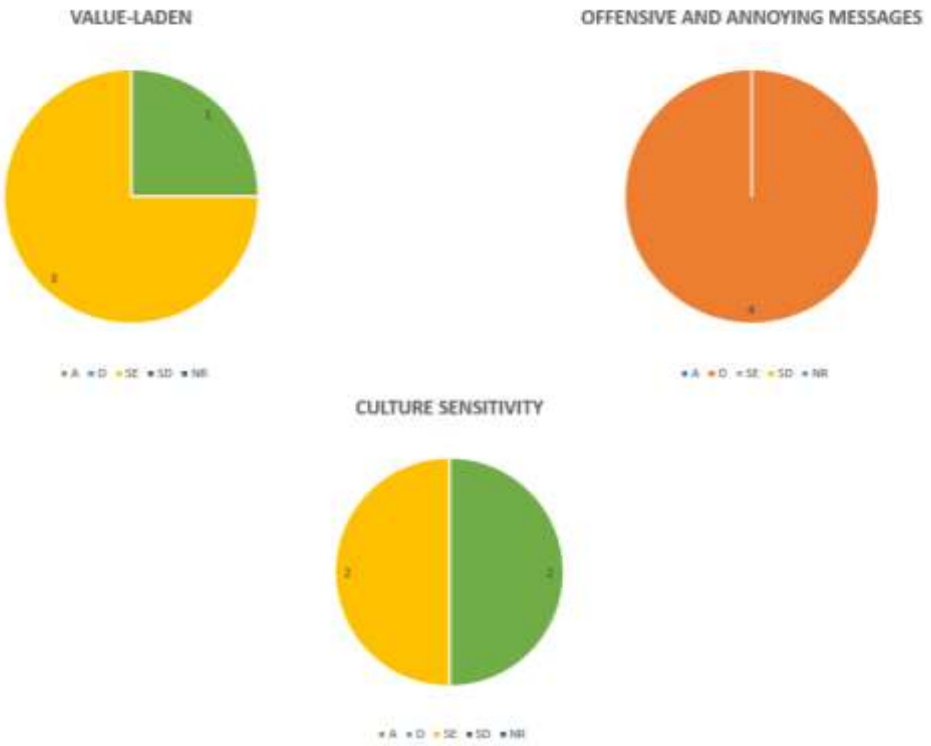


The above figure confirmed that the material was comprehensible for the participants. The message inside the material was clear and there were no confusing messages.

Participant No. 1 *"Kay gi-state man diri sa process kung giunsa gikan sa pagluto padulong sa ingredients. Sunod tanan bisan wala ka naka himo sukad, maka himo ka kay mao diay ni."* Everything is in order because it states the process of cooking and the ingredients needed. Even if you have not tried cooking, you can make one because this is the guide.

D. Acceptability/Appropriateness

Figure 18. *Post-test: summarized impression under acceptability/ appropriateness*



Here, the pretest results under acceptability/appropriateness showed that the material was value-laden, it did not contain offensive and annoying messages, and was culture-sensitive. These were the supporting statements from the discussion:

Participant No. 1 *“Para sa akoa, iyang value ani kay natagaan jud og imprtansya ang saging nga dli lng i-prito. Naa gyud diay lain pamaagi sa pagluto nga madanihon, naa pay lahi na pamaagi sa pagluto, para sakoa, nakahatag og bili kay ako wala pako na ka experience og banana chips, so karun naa na ning cook book,*

maka-ingon ko nga mapasalamaton ko kay madungagan akong kahibalo." For me, the banana itself. It does not only limit to frying. Indeed, there are other ways to cook that makes it enjoyable, and as for me who has never tried making banana chips, this is valuable. Now that the cook book is here, I am grateful for the added learning experience I have.

Participant No. 2 *"Tinuod dako og tabang or dungog sa paghimo og banana chips kay sa inyong gibuhat makit-an sa tao unsay kaayuhan nga mahimo sa banana chips diri sa mga babae sa Can-ayan, makabalo mi unsaon ang saging. Usa pa dako og bili sa akoa kay naa mi sagingan kabalo kog luto banana chips pero karun nakabalo nako unsay lain pamaagi nga ma lami ang pagluto."* Truthfully, it is of big help and uplifting to make banana chips through your activities because people will notice the impact it made to the women of Can-ayan, we know our course of action and means. Another is, this is very important for me for I have banana plantation. I know how to make banana chips, but I just know now the other ways in making.

Participant No. 1 *"Kay pareha diri sa amoa, binukid jud amoa, matagaan og importansya among language."* In our case for example, we use Binukid, our language will be given importance.

Participant No. *2 "Dako nig tabang sa among kabatan-onan kay inig mabasa sa among anak, maka-tuon silag binukid."* This is a big help for our youth, when this material will be read by our children, they will learn the Binukid language.

The significant changes of the material brought after being co-designed by the participants have improved its impression on the instruction, comprehensibility, completeness, and consistency or logical construction. Below is an example of the changes.

From this: (On Sanitization)

To this: (On Sanitization)

From this: (Banana Chips Production)

To this: (Banana Chips Production)

Realizing all the engagement and involvement of the participants in the process, roles of women here were identified.

The designing process allowed the participants to discover their opportunities to express the user's needs. These were the observed main roles that the club assumed in coming up with an extension material through participatory design:

[Objective 2] **Roles that women assume in coming up with an extension material through participatory design**

The designing process allowed the participants to discover their opportunities to express the user's needs.

These were the observed main roles that the club assumed in coming up with an extension material through participatory design:

Copy editor

The club leader acted as the point person to check if the materials were free of grammatical errors. The leader reviewed pages and checked only the grammar and spelling of the material's Binukid terms, phrases, and sentence construction. The leader informed the facilitator (co-designer) of the changes.

It was also observed that the club submitted the material to the indigenous people mandatory representative (IPMR) of the barangay. The IPMR proofread all the Binukid content of the extension material to ensure that the message flow was going well. The IPMR is identified as the representative of an

indigenous community, one of its duties is to closely coordinate and collaborate in the implementation of projects that support the welfare of the indigenous people.

Club members are the featured faces in the pages

The club has initially decided who will be featured in the photo sections of the material. They have agreed to base it on their roles during banana chips production, yet in the actual shoot, it was observed that women happily volunteered to be included in the photos.

Selection of fonts, colors and images

The participants in the entire process of the design phase assumed equal roles in choosing their desired choice per item. At the same time, the facilitator asked them to pin their answers on the manila paper. Hence, the participatory approach in choosing the fonts, colors, and images also allowed them to explain the reasons for their preference, which were highly considered.

Other roles of women

During the introduction part of the focus group discussion, the members shared their roles in the club. One (1) central theme was identified: postharvest processing roles. Under these roles were some parts performed in the stages of a postharvest system. Table 1b presents the responsibilities/roles of the participants.

Table 1b. *Roles in the Club*

Theme	Description
Postharvest processing roles	
Primary Processing	Activities which encompass a sequence of operation such as harvesting, cleaning, dehulling and soaking
Secondary Processing	Activities which encompass a sequence of operation such as cutting, cooking, frying and mixing
Product evaluation	Activities which encompass a sequence of operation such as quality control, standard recipes, administration and management
Packaging	Includes weighing, labelling, sealing
Marketing	Responsible for publicity, selling, and distribution

Postharvest processing

Postharvest processing is directed to the conservation of produce, process goods and value adding to make the material more readily usable and economically more remunerative (Postharvest Technology Handout, Sher-e-Bangla Agricultural University, 2014). It is gaining the importance for increasing agricultural productivity and growers intend to become producer-cum-processor by utilizing the technologies of processing.

According to Hasanuzzaman (2014), the postharvest system encompasses a sequence of activities and operations divided into technical and economic activities.

For the members of the Rural Improvement Club (RIC), the activities are particularly true as participants expressed:

[Primary Processing (Harvesting)]

Participant no. 3: *"Kami tanan gyud maam magtinabangay. Ako tigpangita sa saging kay naa man miy punoan, akong ihatod sa among president."* Everyone helps. I take the role in searching for bananas, and since we have it, I deliver it to our president.

[Primary Processing (Cleaning)]

Participant no. 2: *"Kami tanan galihok sugod sa paghugas sa saging…"* Everyone is working even from the beginning in washing the bananas.

[Primary Processing (Dehulling)]

Participant no. 3: *"Tanan nami magpanit hantod sa maluto."* All of us peel the bananas until cooking them.

Participant no. 4: *"Akong kontribyusyon mao ang magpanit, maghugas."* My contribution (to the club) are peeling and washing.

[Secondary Processing (Slicing and Cooking)]

Participant no 2. *"Pero gatabang gihapon ko sa pagluto, pagslice hantod sa mahuman."* I do still help in the cooking and slicing until it is done.

Participant no. 4: "*Apil pod ang pag-slice."* Including the slicing.

Participant no. 5: *"Ako tig-slice ug tig-mix sa ingredients".* I do the slicing and mixing of the ingredients.

[Product Evaluation (Quality Control)]

Participant no 2.: "*Pagtan-aw sa among gahimoon murag akoy gahatag sa instruction sa trabaho, nga maayo ang gahimoon ug limpyo"*. (I) oversee our operation, I seem to give the instruction of the work that it must be done well and clean.

[Packaging]

Participant no 2: *"Gatabang gihapon ko sa packaging."* I do still help in the packaging.

Participant no. 5: *"…tig-timbang pod."* In weighing, too.

[Marketing]

Participant no. 1: *"Pagtabang ug pangita ug paagi nga mahalin ang amoang negosyo nga banana chips."* I help in finding ways to market our business in banana chips.

[Objective 3] **Participatory processes to ensure participation of users and stakeholders**

1. Interpersonal communication for access to information and dissemination

   Attendance of a designated representative to the barangay session

Access to information began from the local unit through a Barangay session where the attendance of community leaders was required. The session followed a procedure of presentation-discussion-decision-approval for every agendum.

Identification of final schedule (date and time) of activities

The community way of life in Can-ayan, especially with women, was formed habitually. Their lives began with fulfilling the household chores, including fetching their kids to and from school, attending to their flocks, gardening, and preparing meals. Sometimes, errands were done in the middle of the day. Their day ended with fetching the kids from school and attending to final chores.

For instance, when women were invited to join any communal activities, including training/workshops, access to complete information such as when and where was seen as valuable knowledge before deciding to commit time and participate. This time element was precious for them as it left implications for their responsibilities at home.

Information dissemination through an assembly, house-to-house visit of the member

Next, the community leaders spread the information that concerns a target sector. A separate assembly was held for dissemination. To reach the objective of information dissemination, it has been observed that the community leaders went from house to house and talked before the concerned household members. When the person is not around, the leader will ask when is the best time to visit again. Can-ayan has least to zero telecommunication signals, so the community leaders needed to take the path on foot to reach houses and make the most of the available time to speak. When the concerned household is present and available, the community leader relayed the information to the member. The member then will confirm his/her participation.

2. Interpersonal communication to ensure active group discussion and feedbacking

Meeting of club members

The members were called for their attendance. If a member tends to forget the schedule of the meeting, a member volunteers to head in the home address of the expected attendee.

Use of Binukid language as the medium of exchanging ideas

While these members of the club also know how to speak in Cebuano for translation when the facilitator listened and talked, it was observed that there was an increased participation when all participants during the focus group discussions use the Binukid language. The participants can express themselves more and say more.

3. Sense of ownership

Material copyright

Indigenous knowledge and practices especially on the language used need to be protected and preserved, so the club would want the translated extension material to be proudly owned, as it will continuously be passed on to generations.

For objectives #2 and #3, roles being performed by women both as a community member and club member provided evident support to what King & Schielmann (2004) emphasized that the participation of indigenous communities in all stages of the design, implementation, and evaluation of an educational program and services is vital to its success. In the case of Bukidnon women, having them participate fully in the exercise of designing and testing showed coherence and alignment in their common goal, that is to realize their full potential in providing economic support to their family and the commitment to transcend their learning to generations. Also, having sincere leaders in the community suggested actions for participation. The presence of club leader and IPMR allowed women to be certain in their decision – making to participate.

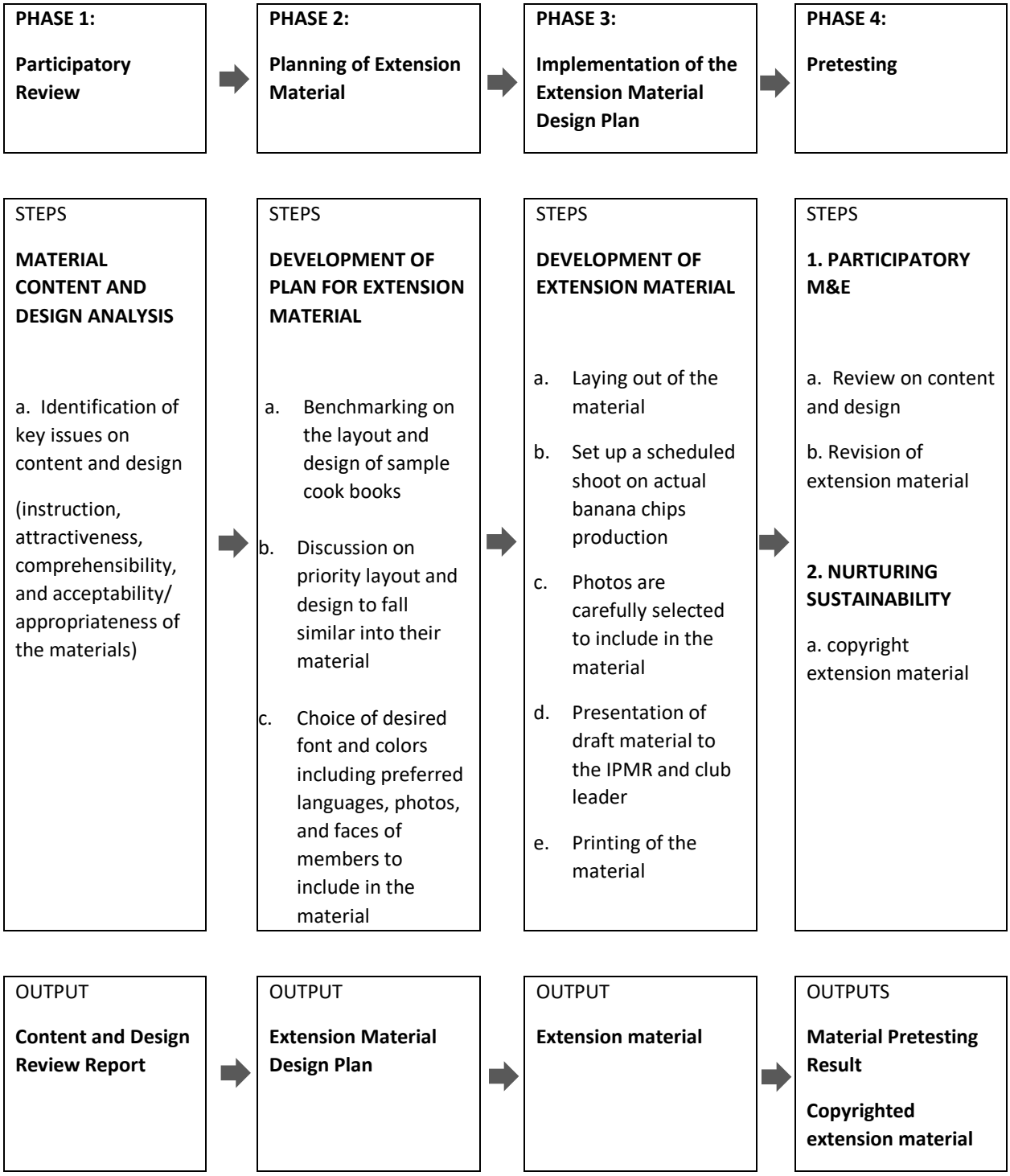
Here at the last objective of the study, was a process discovery framework on participatory design and testing of extension material for the indigenous communities. The layout of this framework is inspired by Acunzo's ComDev planning having the identified phase, steps, and outputs.

[Objective 4] ***Framework on participatory design and testing of extension material for the indigenous communities***

The developed process framework illustrated the participatory design and testing of extension material for indigenous communities as observed in the community of women of the Bukidnon tribe.

Participatory design and testing are dynamic processes, adjustable according to the situation, the time and resources available, and, most important to the agenda of the indigenous communities.

Figure 19. *Framework on participatory design and testing of extension material for the indigenous communities*



Phase 1. Participatory review

The first phase involved studying the context where an existing extension material was reviewed by identifying critical issues on instruction, attractiveness, comprehensibility, and acceptability/appropriateness of the materials that would have a bearing on the planning and designing of a new material. Using the micro-interlocutor techniques, a material content and design analysis generated an understanding of participants' preferences for the material gathered in a content and design review report.

Phase 2. Planning of extension material

In the second phase, the content and design review report become influential statements to plan out their own material with the assistance of a designer's perspective allowing them to benchmark from some printed cook books magnifying their lens to the elements and principles of design forming into a unified layout of their own. A major output is the formulation of the extension material design plan, which includes the layout, selection of colors, choice of fonts, appropriate graphics and images. The plan is then translated into action.

Phase 3. Implementation of the extension material design plan

Phase three involves the actual implementation of planned extension material. A designer is also a facilitator who has to enable participants to take an active role in the decision-making of the layout, performing roles in the scheduled shoots, and selecting photos to be placed in the material. Influential sources will be engaged to validate the proper use of Binukid terms. In the case of Bukidnon women, the IPMR was a relevant actor aside from the club leader. It is also essential to consider printing

drafts and showing them to them until consensus and agreement with the club is reached.

Phase 4. Pretesting

Pretesting is a procedure that runs through the whole process of evaluating according to its content and design, and by which the new end-users accessed the material will determine if it was followed according to plan and how successfully. Revision is expected in this phase to achieve the desired material content and design. In this final phase, special attention is also given to ensuring the material's sustainability.

DISCUSSION

Wenger (1998) explained that PD may be complex and combines doing, talking, thinking, feeling, and belonging.

Observing the women in the entire participatory design and testing, these are significant observations documented:

1. The participatory process provided an avenue about women’s impression on banana food processing (e.g. the idea of processing banana can also be done through frying with added flavors, posing a market value as it can be sold at a fair price).
2. Women chose to participate skill-development activities for economic gain, that they will earn income, therefore, an advantage to provide the needs and support their children.

3. Women take their roles happily. The relationship built over time provided them the sense of belongingness and distinctiveness of who they are and what they can do, that their collective strength as mothers help them go through the phases of life.

Now on the process framework, during the review phase, empathizing to the material and be able to discuss the challenges and difficulties has eventually led to the active participation of the participants in general. However, it is important that conversations must start from their club leader to encourage other members to talk about their concerns; asking about what they say, think, feel and do about the material (Dam, 2022).

Results showed that participants during the review phase have diverse sentiments to every aspect: instruction, comprehensibility, acceptability/appropriateness of the material. This implies that each club member could have taken the instructions differently, the acceptance to the messages depended on their interest, the content could be comprehensible for some while to others were confusing, and the material posed value for them though at times it can be frustrating that the product output cannot be achieved similar to the desired outcome.

During the design phase, it was observed that all participants were involved in the making of things, thus, stated by Simonsen et.al (2016), the making of things is said to be design participation.

In this study, it was observed that providing them the tools (Simonsen et. al., 2016) and avenue to express their ideas and possible solutions (Gamwell, 2020) ensured the participants active participation and getting them prepared for their creativity.

In the case of Bukidnon women, design participation was evident through (a) reading of sample cookbooks, (b) gaining fundamental knowledge on the basic elements and principles of design, (c) discussion and presentation of ideas using their own Binukid language, and (d) involving them in the photoshoot to provide real images for the material

The pretest phase provided the chance to refine solutions (Introduction to Design Thinking, 2011). In this study, the iterative process involved were: (a) gathering opinions from the new end-users, and (b) validating appropriate Binukid language

Process Documentation

This process documentation details the steps to engage women in participatory design and testing, allowing them to actively identify and address key issues in content and design, create their own material, and pretest it. In Phase 1, the Participatory Review focuses on engaging learners in identifying issues related to instruction quality, attractiveness, comprehensibility, and appropriateness. This involves preparing materials, defining review criteria, engaging stakeholders, organizing review sessions, and compiling feedback into a Content and Design Review Report.

Phase 2 involves planning the layout and design of extension materials, such as cookbooks. This includes benchmarking existing materials, prioritizing layout and design elements, and selecting fonts, colors, languages, photos, and other design aspects. Phase 3 focuses on implementing the design plan, which includes organizing content, conducting photoshoots, integrating photos, and presenting draft materials for feedback before printing the final product. Finally, Phase 4 involves pretesting the material through participatory monitoring and evaluation, revising the material based on feedback, and securing copyright to ensure sustainability. The outputs of this phase are a detailed pretesting result report and a copyrighted extension material.

Process Documentation: Phase 1 - Participatory Review

This process documentation outlines the steps to conduct a participatory design and testing for women engaging them and become active participants to identify and address key issues in content and design, to create their own material, and pretest it.

Objective

The objective of Participatory Review is to engage the learners in the identification of key issues related to the content and design of the extension material. This phase focuses on aspects such as instruction quality, attractiveness, comprehensibility, and acceptability/appropriateness.

Scope

This process applies to extension materials used in educational or training contexts. It involves active participation with the learners, content experts (the faculty extensionists), and designers.

Steps in the Process

Step 1: Identification of Key Issues on Content and Design

1.1 Preparation

1.1.1 Gather Materials

- Collect all extension materials to be reviewed.
- Ensure access to digital content, printed materials, and multimedia resources as required.

1.1.2 Define Review Criteria

- Establish criteria for evaluating instruction quality, attractiveness, comprehensibility, and acceptability/appropriateness (See appendix)
- Criteria should be clear and relevant to the context of the materials.

1.2 Stakeholder Engagement

1.2.1 Identify Stakeholders

- Identify key participants to contribute in the review process. These include:
    - Learners – the group/club who has undergone the training/workshop
    - Educators and trainers as subject matter experts – the faculty extensionists responsible for the delivery of instruction/facilitation of learning
    - Instructional designers – individuals who are experts in designing an instructional material

1.2.2 Invite Participation

- Invite identified contributors to share in the review process. This includes: sending a letter to the community leaders (barangay council and the target club)
- Clearly communicate the purpose, scope, and timeline of the review.

1.3 Review Sessions

1.3.1 Organize Review Sessions

- Schedule review sessions to gather feedback from stakeholders. Come to an agreement of specific time and place.

- Sessions can be conducted in a focus group.

1.3.2 Provide Guidelines

- Provide participants with guidelines and criteria for the review.
- Ensure participants understand how to evaluate the materials against the defined criteria.

1.4 Conduct the Review

1.4.1 Instruction Quality

1.4.1.1 Instructional Clarity

- Evaluate the clarity of instructions and explanations.
- Ensure the materials provide clear, step-by-step guidance where needed.

1.4.2 Attractiveness

1.4.2.1 Visual Design

- Analyze the visual appeal of the materials, including the use of colors, fonts, and layout.

1.4.2.2 Engagement

- Evaluate how engaging the material is for the target audience.

1.4.3 Comprehensibility

1.4.3.1 Readability

- Assess the readability level of the text.

1.4.3.2 Organization

- Evaluate the organization and logical flow of the content.
- Check for effective use of headings, subheadings, and organizational tools.

1.4.3.3 Examples and Illustrations

- Check for the inclusion of relevant examples and illustrations to aid understanding.

1.4.4 Acceptability/Appropriateness

1.4.4.1 Cultural Sensitivity

- Check for inclusion of diverse perspectives and absence of culturally insensitive content.

1.4.4.2 Relevance

- Evaluate the relevance of the material to the target audience's needs and interests.

Step 2: Documentation of Findings

2.1 Collect Feedback

- Collect feedback from all stakeholders during and after the review sessions.
- Organize feedback according to the review criteria.

2.2 Analyze Feedback

- Analyze the collected feedback to identify common issues and patterns.

2.3 Create Content and Design Review Report

- Compile the findings into a structured Content and Design Review Report.
- The report should include:
    - An executive summary
    - Detailed findings for each review criterion
    - Specific examples and evidence from the materials
    - Recommendations for improvement

Output

The primary output of Participatory Review is the Content and Design Review Report. This report documents the key issues identified during the review process and provides recommendations for enhancing the instructional materials.

Process Documentation: Phase 2 - Planning of Extension Material

This process documentation outlines the steps required to develop a comprehensive plan for the layout and design of extension materials, ensuring a collaborative approach that incorporates feedback and best practices.

Objective

The objective of Planning of Extension Material is to develop a comprehensive plan for the layout and design of extension materials, such as cookbooks. This phase

includes benchmarking of existing materials, prioritizing layout and design elements, and selecting fonts, colors, languages, photos, and other key design aspects.

Scope

This process applies to the development of extension materials intended for educational, instructional purposes. The focus is on creating visually appealing and effective materials that meet the needs of the target audience.

Steps in the Process

Step 1: Development of Plan for Extension Material

1.1 Benchmarking on the Layout and Design of Sample Cookbooks

1.1.1 Identify Sample Cookbooks

- Collect a variety of sample cookbooks for benchmarking.
- Ensure the samples represent a range of styles and target audiences.

1.1.2 Analyze Layout and Design

- Examine the layout, design, and content structure of each sample cookbook.
- Take note of effective design elements, including:
    - Cover design
    - Table of contents
    - Recipe layout
    - Use of images and illustrations
    - Typography and color schemes
    - Page organization and flow

1.1.3 Document Best Practices

- Identify best practices and innovative design elements from the sample cookbooks.

Document these practices for reference in the planning process.

1.2 Choice of Desired Fonts, Colors, Languages, Photos, and Faces

1.2.1 Select Fonts and Colors

- Discuss and decide on the desired fonts and color schemes for the extension material.
- Ensure the choices align with the overall aesthetic and are suitable for the target audience.

1.2.2 Determine Preferred Languages

- Identify the preferred languages to be included in the extension material (Binukid language)
- Consider the language proficiency and preferences of the target audience.

1.2.3 Choose Photos and Faces

- Decide on the types of photos and faces to be included in the material.
- Ensure the selected images are culturally appropriate, engaging, and relevant to the content.
- Consider including photos of members or individuals who resonate with the target audience.

Step 2: Documentation of the Extension Material Design Plan

2.1 Identification and Selection of Design Elements

- With a focus group, identify and select all the chosen design elements, including fonts, colors, languages, photos, and layout preferences.

2.2 Develop the Design Plan

- Create a comprehensive Extension Material Design Plan.
- The plan should include:
    - An executive summary
    - Detailed descriptions of the selected design elements
    - Visual examples or mockups of the proposed layout and design
    - Guidelines for the use of fonts, colors, and images
    - Language considerations and inclusion strategy

2.3 Review and Finalize the Design Plan

- Review the draft design plan with the participants.
- Gather feedback and make necessary revisions.
- Finalize the Extension Material Design Plan.

Output

The primary output of Planning of Extension Material is the Extension Material Design Plan. This document provides a detailed blueprint for the layout and design of the extension material, incorporating participants' preferences and best practices from benchmarking.

Process Documentation: Phase 3 - Implementation of the Extension Material Design Plan

This process documentation outlines the steps required to develop and produce the extension material, ensuring a systematic approach from initial layout to final printing.

Objective

The objective of the Implementation of the Extension Material Design Plan is to execute the design plan and develop the extension material, ensuring it meets the outlined specifications and participants' expectations.

Scope

This process applies to the creation and production of extension materials, such as cookbooks or instructional guides. It involves the layout of content, scheduling and conducting photoshoots, selecting photos, presenting draft materials for review, and printing the final material.

Steps in the Process

Step 1: Laying out the Material

1.1 Content Organization

- Organize the content according to the structure defined in the Extension Material Design Plan.
- Ensure the content flows logically and is easy to follow.

1.2 Apply Design Elements

- Use the chosen fonts, color schemes, and layout designs specified in the design plan.
- Integrate visual elements such as headings, subheadings, bullet points, and other organizational tools.

1.3 Initial Draft Layout

- Create an initial draft layout of the material.
- Include placeholders for images and other multimedia elements that will be added later.

Step 2: Set Up a Scheduled Shoot on Actual Banana Chips Production

2.1 Plan the Photoshoot

- Schedule a photoshoot to capture high-quality images of the banana chips production process.
- Coordinate with the club, including production staff and photographers.

2.2 Prepare for the Shoot

- Ensure all necessary equipment and materials are ready for the photoshoot.
- Create a shot list detailing the specific scenes and elements to be captured.

2.3 Conduct the Photoshoot

- Execute the photoshoot as planned, capturing detailed and engaging photos of the production process.

- Take multiple shots to ensure a variety of images are available for selection.

Step 3: Photos are Carefully Selected to Include in the Material

3.1 Review Photos

- Review the photos taken during the shoot.
- Select the best images that effectively illustrate the banana chips production process and align with the design plan.

3.2 Edit Photos

- Edit the selected photos to enhance their quality and ensure consistency with the design aesthetics.
- Make adjustments to brightness, contrast, and color balance as needed.

3.3 Integrate Photos into the Material

- Insert the selected and edited photos into the draft layout of the material.
- Ensure photos are appropriately placed to enhance the content and improve visual appeal.

Step 4: Presentation of Draft Material to the IPMR and Club Leader

4.1 Prepare Draft Material

- Compile the draft version of the extension material, including all text, design elements, and photos.
- Ensure the draft is complete and accurately represents the design plan.

4.2 Present Draft Material

- Present the draft material to the Indigenous Peoples Mandatory Representative (IPMR) and the club leader.
- Provide an overview of the design choices and how they align with the design plan.

4.3 Gather Feedback

- Collect feedback from the IPMR and club leader on the draft material.
- Note any suggestions for changes or improvements.

Step 5: Printing of the Material

5.1 Finalize Material

- Incorporate any feedback received from the IPMR and club leader.
- Ensure the final version of the material is polished and ready for printing.

5.2 Select Printing Service

- Choose a reliable printing service that can produce high-quality prints.
- Consider factors such as cost, turnaround time, and print quality.

5.3 Print the Material

- Send the final version of the extension material to the selected printing service.
- Review the printed materials for quality assurance upon receipt.

Output

The primary output of the Implementation of the Extension Material Design Plan is the Extension Material**.** This final product should be a high-quality, visually appealing, and comprehensible material that effectively meets the educational or instructional objectives outlined in the design plan.

Process Documentation: Phase 4 – Pretesting

This process documentation outlines the steps required to pretest extension materials, ensuring a participatory approach to monitoring and evaluation, making necessary revisions, and securing copyright to protect the material's intellectual property.

Objective

The objective of Pretesting is to evaluate the extension material through participatory monitoring and evaluation (M&E), make necessary revisions based on feedback, and ensure the sustainability of the material by securing copyright.

Scope

This process applies to the pretesting of extension materials to ensure they meet quality standards and stakeholder expectations. It includes reviewing content and design, revising the material, and securing copyright to protect the material's intellectual property.

Steps in the Process

Step 1: Participatory M&E

1.1 Review on Content and Design

1.1.1 Organize Review Sessions

- Schedule review sessions with the prospective users (new and incoming participants of the training)
- Prepare materials and guidelines for the review process.

1.1.2 Conduct Reviews

- Facilitate review sessions to gather feedback on the content and design of the extension material.
- Ensure a participatory approach, encouraging input from all participants by focus group discussion.

1.1.3 Collect Feedback

- Collect detailed feedback on various aspects of the material, including:
    - Accuracy and clarity of content
    - Visual appeal and design elements
    - Comprehensibility and user-friendliness
    - Cultural appropriateness and relevance

1.2 Revision of Extension Material

1.2.1 Analyze Feedback

- Analyze the feedback collected during the review sessions.
- Identify common issues and areas for improvement.

1.2.2 Revise Content and Design

- Make necessary revisions to the content and design based on the feedback.
- Ensure all revisions align with the original objectives and enhance the material's quality.

1.2.3 Review Revised Material

- Conduct a final review of the revised material with key stakeholders to ensure all issues have been addressed.
- Make any additional adjustments as needed.

Step 2: Nurturing Sustainability

2.1 Copyright Extension Material

2.1.1 Prepare Documentation

- Gather all necessary documentation for copyright application, including:
    - Final version of the extension material
    - Author and contributor information
    - Publication details

2.1.2 Apply for Copyright

- Submit a copyright application to the relevant authority or copyright office.
- Ensure all required information is accurately provided.

2.1.3 Secure Copyright

- Obtain the copyright certificate or confirmation from the copyright office.
- Ensure proper documentation and storage of the copyright information for future reference.

Outputs

Material Pretesting Result

- A detailed report summarizing the feedback from the participatory M&E process.
- Documentation of revisions made based on stakeholder input.

Copyrighted Extension Material

- A finalized version of the extension material with secured copyright, ensuring protection of intellectual property and sustainability of the material.

Employing participatory design and testing for an extension material which will be used by the indigenous communities generated several merits among co-designers:

1. Increased acceptance and adoption of the material when IP language is primarily used. The use of Binukid dialect as the primary language gained a feeling to sense of ownership over the final material.
2. Fostering of a long-term partnership and opportunities. Co-designing built trust and relationships as it was evidently experienced through continuing feedback and enhancement of the material.
3. For non-IPs, the entire participatory process encouraged a deeper sense of respect when communicating to IP members. Decision-making processes provided the IP members the voice which led to valuing their prominent moralities.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

The participatory design and testing of an extension material for the Bukidnon Tribe in Malaybalay, Bukidnon, discovered the indigenous way of designing and pretesting a learning material from an extension project facilitated by a state university. This study generally aimed to determine how to implement the participatory design and testing of extension materials on food handling and entrepreneurship for indigenous women. Following the telling-making-enacting framework (Simonsen & Robertson, 2016), it allowed the participants to empathize with the problems encountered in understanding the message content and design of the learning material produced by the state university and defined the problem in a user-centered way. It ideated and created a prototype of the desired material, with the designers' significant role and the non-designer's combined ideas. The prospective users tried out the final material.

The participatory review of the materials handed during an extension project generated mixed responses from the participants, surfacing concerns about the extension material's instruction, attractiveness, comprehensibility, and acceptability/ appropriateness.

In the case of Bukidnon women, exploring participatory design and testing for an improved extension material with the target community yielded positive results. Results showed unified acceptability and substantial agreement on comprehensibility

as there were no confusing messages in the use of images and texts, provided clarity in the instruction mainly from the supported appropriate language used, which was in Binukid, and posed high interest to be used by the following end-users of the material as it provided economic and empowering values in their lives.

Therefore, participatory design and testing allowed the participants to agree on their desired material criteria. This study generated a *process discovery framework* for SUC extensionists, with main outputs on content and design review reports, extension material design plans, extension material, pretesting results, and copyrighted material.

Conclusion

In the case of Bukidnon women, participatory design and testing of extension material with the indigenous community involved four phases, and all activities engaged under it must be done through interpersonal communication as it worked best for them.

This study drew a process discovery framework for designing an extension material with the indigenous communities. Phase 1- Participatory review, Phase 2- Planning of extension material, Phase 3- Implementing the extension material design plan, and Phase 4 – Pretesting. To facilitate the phases, the participants undertook necessary steps and procedures, particularly on material content and design analysis, development of a plan for extension material, development of extension material, participatory monitoring and evaluation, and suggesting a sustainability measure. The main outputs of the framework were: a review report, material plan and the actual material, M&E report, and copyrighted material.

Recommendations

This study may be furthered by exploring the possibility of:

a) Pilot test the framework in other indigenous communities along the data analysis tool for the overall improvement of an I.P. user-centered material in the extension projects of higher education benefiting I.P. communities;

b) Explore documenting/capturing their experiences by having a one-to-one interview. This will allow them to share their learning journey on designing a material (e.g., *what went well, what was not working well, and ideas for action*).

c) Package a learning journey compilation of the co-designers as an inspirational guide for other I.P. communities and SUCs

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