Preferences of Educational Materials and Level of Knowledge on Learning Technologies of Fisherfolks in Selected Coastal Communities in Palawan, Philippines

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Abstract

Entrepreneurship education is deemed important in the discourse of community empowerment and development, especially in coastal communities where poverty is widespread. With adequate entrepreneurship education, entrepreneurial intention can be fostered among local fisherfolks and aquafarmers for business creation. This could be achieved through the use of educational materials and learning technologies. However, for better communication of this knowledge to the locals, using a medium of their preference suitable to their level of knowledge on learning technologies should be taken into consideration. Thus, this study was conducted to determine the preferred type of educational materials and the level of knowledge and skills of fisherfolks and aquafarmers on available learning technologies. We conducted a face-to-face survey interview using a Computer Assisted Personal Interviewing (CAPI) tool in 11 coastal communities in Palawan, Philippines (N=395). Results of this study revealed that the majority of the participants identified listening to a lecture, seminar, and workshop (88.9%) as their highly preferred medium of learning. This was followed by charts, diagrams, and pictures (82.6%), flyers, calendars, and books (73.5%), video (73.3%), audio (through hearing) (44.7%), and songs, jingles, and chants (35.1%). The majority of the participants (57%-88%) claimed that their level of knowledge in using spreadsheets, word processors, presentation tools, laptops, internet browsing, and smartphones is generally poor. It was then explored how these preferences and levels of knowledge can be predicted by age, gender, ethnicity, and educational background using Linear Regression Analysis. The data suggested that among these predictors, only age significantly affected the learning materials preferences. On the other hand, the level of

knowledge on available learning technologies differed by age, ethnicity, and educational background but not by gender. Our findings can be used as a basis for decisions in the transfer of knowledge among local fisherfolks and aquafarmers. Furthermore, it can aid in designing and creating potentially effective educational materials for the coastal communities in Palawan.

Keywords

Introduction

Entrepreneurship is mostly viewed as a catalyst of economic growth, in both developed and developing countries, in an era of economic reforms (Roxas, 2014; Matlay, 2006). The creation of small businesses is commonly acknowledged as a precursor to the employment generation needed in poverty-stricken communities like coastal areas. In the Philippines, poverty is not a peculiar situation for fisherfolks and aquafarmers. They are identified as one of the eleven 11 basic sectors in the country with the highest poverty incidences (PSA, 2020). With the impact of COVID-19, the number of poor in coastal communities is expected to continue to increase (Reyes et al., 2020). Hence, there is a pressing need to conduct entrepreneurship education in coastal areas to uplift the socio-economic status of fisherfolks and aquafarmers.

Entrepreneurship education plays an important role in cultivating relevant knowledge and experience to improve skills and develop potential resources (Wei et al., 2019). Pieces of Evidence from different research studies show that exposure to entrepreneurship education affects entrepreneurial intentions (Carapuco et al., 2021; Wardana et al., 2020; Weber et al., 2009) which could drive a person to start up small-scale businesses needed to stimulate economic growth. Moreover, it strengthens the value orientation of entrepreneurs for a sustainable society (Lindner, 2018; Rashid, 2019). Thus, it can be argued that if entrepreneurship education is boosted among individuals, such as fisherfolks in coastal communities, the probability of them being committed to starting up a sustainable entrepreneurial activity will increase leading to a significant positive change in the quality of life in coastal communities.

Entrepreneurship education could be conducted using different educational materials and learning technologies (Chen et al., 2021). According to Clarc (1994), a multifaceted approach, combining printed materials, audiovisual presentations, and face-to-face interaction, is probably the best way to start an education program. Educational materials are intended to be used during the processes of teaching and learning, in other words, when studying specific educational content and achieving specific educational goals (Mazgon & Stefanc, 2012). This could be in the form of printed materials (eg. flyers, calendars, books, pictures, diagrams, charts), electronic resources (eg. videos, jingles, chants, songs) and lectures (training, seminar, workshops). On the other hand, learning technologies refer to laptops, cellphones, tablets, and software such as presenting tools, word processors, and spreadsheets which support the teaching in the learning process to make learning more interesting and easier to access (Drozdova, 2007). A considerable amount of literature provides insights into the importance of the incorporation of educational materials and learning technologies in entrepreneurship education (Wu et al., 2018; Chen et al., 2021). However, there are insufficient studies that focus on how the local fisherfolks and aquafarmers wanted this knowledge to be communicated to them.

We conducted this study to determine the preferred type of educational materials and the level of knowledge and skills of fisherfolks and aquafarmers on available learning technologies. We also assessed the interrelationship between these preferences with socio-demographic characteristics. The study is part of the Entrepreneurship Education for Fisherfolks and Aquafarmers towards Developing Farm-Gate Markets for Aquatic Products (EEFFMAP) Research, Development and

Extension (RDE) Program funded by the Commission on Higher Education (CHED) which is implemented by the Western Philippines University (WPU) in collaboration with Palawan State University.

Conceptual Models

Entrepreneurship Education

Entrepreneurship education is a learning process in which the enhancement of knowledge, skills, attitudes and personal character related to entrepreneurship happen (Hussain and Norashidah, 2015). In the context of fisherfolks and aquafarmers in Palawan, this learning process is imperative in order for them to build confidence in venturing into innovation and recognizing opportunities. The social cognitive theory considers individuals as agents and active contributors to the development of the circumstances that surround their lives (Bandura, 2018). Individuals tend to pursue their goals if they consider their own abilities and resources to be capable of achieving the desired results (Bandura et al., 2003). Through entrepreneurship education, they can adjust their cognition which will eventually direct their actions and make their entrepreneurship more coherent and meaningful (Wardana et al., 2020). Furthermore, perceived self-efficacy improves the prediction of intention (Karali, 2013) which is a catalyst for action. This is in concord with the findings from the study by Weber 2009 and de Meza 2002 that in the context of funding entrepreneurial ventures, subsidizing finance for new entrepreneurs can be socially wasteful if the entrepreneurial intention is not cultivated within them. This suggests that a business is doomed to face failure if an entrepreneur lacks entrepreneurial intention.

Learning Styles

Jantan and Razali (2002) defined learning styles as the way the learners concentrate, and their method of processing and obtaining information, knowledge, or experience. According to Awla (2014), Learning styles are defined as "the complex manner in which, and conditions under which, learners most effectively perceive, process, store, and recall what they are attempting to learn". In the context of conducting entrepreneurship education to fisherfolks and aquafarmers, it can be argued that the success of the transfer of knowledge depends much on their ability to adapt lessons based on their preferences for the mode of learning. Othman & Amirudin (2010) reiterated that a teacher should be creating an environment to fulfill the demand of learners' various learning styles. A recent review (Howard-Jones, 2014) showed that over 90% of teachers in five countries (the United Kingdom, the Netherlands, Turkey, Greece, and China) agreed that individuals learn better when they receive information tailored to their preferred learning styles.

Various models of learning styles are identified from earlier studies. Among them is VARK learning style by Fleming in 2006. This learning style is modified by classifying learners into four different modes. The modes are based on different senses, namely visual, aural, reading, and kinesthetic. In aural mode, learners tend to get information through listening and discussion. In reading mode, these learners find it easy to accept and interpret printed information. In visual mode, the students are more prone to accept learning through interpreting charts, graph figures, and pictures. While learners who are inclined to kinesthetic mode have the tendency to accept learning based on behavior such as touch, feeling, seeing, and listening.

According to Ismail (2010) classifying learners according to mode is necessary so that the effectiveness of each lesson in different VARK learning modes can be observed. A study conducted by Wright & Stokes (2015) explored different learning preferences of students based on the VARK model and the results revealed that it is important to consider these preferences in developing teaching and learning approaches. Similarly, in the study of Srichailard et al. 2019, they evaluated the appropriateness of a framework of project-based learning by analyzing through VARK theory to shape a

protocol for improving the content management for bachelor degree students majoring in Computer Education of Nakhon Pathom Rajabhat University in Thailand. After this protocol underwent six stages of evaluation, the appropriateness was certified by the experts as the evaluation result stated that the conceptual framework synthesized possesses a high level of appropriateness at 4.62±0.50.

This goes to show that the consideration of learning styles can be beneficial to the students. According to Virleen (2010), the characteristics of the VARK learning style model can be used to help produce teaching materials, especially software for the multimedia course based on VARK learning style model, which is suitable and intrigues learners to make an effective learning process, indirectly.

Methodology

Study Area

Palawan is one of the 82 provinces of the Philippines located between a latitude of 7ºC and 11ºN and a longitude of 117º and 199ºE, with the Sulu Sea and Balabac Strait bordering the eastern coast and the South China Sea and Mindoro Strait on the western coast. It is an archipelagic province with a total land area of 14,896 km^2, comprising around 1,780 islands with approximately 2000 km coastline where the main island forms an elongated strip, oriented in a north-southwest direction. The biggest province, Palawan occupies about one-fifth of the country's land and marine territory with the largest mangrove cover (60,033.8 ha) (Madarcos et al., 2021; Cayetano et al., 2023). However, the coastal areas of Palawan are vulnerable to coastal flooding due to its low coastline elevation zones (Alcantara et al., 2023).

Palawan, called the 'last ecological frontier', was declared a UNESCO Man and Biosphere Reserve in 1990, owing to its diverse and globally significant biodiversity. According to the International Union for the Conservation of Nature's classification, there are 105 threatened species, and of the 105 threatened species 42 are Palawan endemics (UNESCO, 2018). The total population of the islands is approximately 1.2 million with relatively young and ethnically diverse demography. Coastal communities are primarily composed of migrant settlers from different parts of the Philippines, and many households are engaged in marine-based activities, including capture fisheries, seaweed farming, gleaning, aquaculture, pearl farm laboring, fish processing, and fish trading. The marine waters of Palawan are top fishery producers and the islands are major tourist destinations (Madarcos et al., 2022, Gajardo et al., 2023). This study was conducted in Palawan because all 23 municipalities and one city are coastal with large population of fisherfolks.

The study was conducted in 11 coastal Barangays in Palawan, Philippines (Figure 1). Three Barangays (Tagburos, Babuyan and San Rafael) are in Puerto Princesa City, four Barangays (Calawag, New Guinlo, Pularaquen and Pamantolon) are in Taytay, two Barangays (Caramay and Rizal) are in Roxas, and two Barangays (San Juan and Isaub) are in Aborlan.
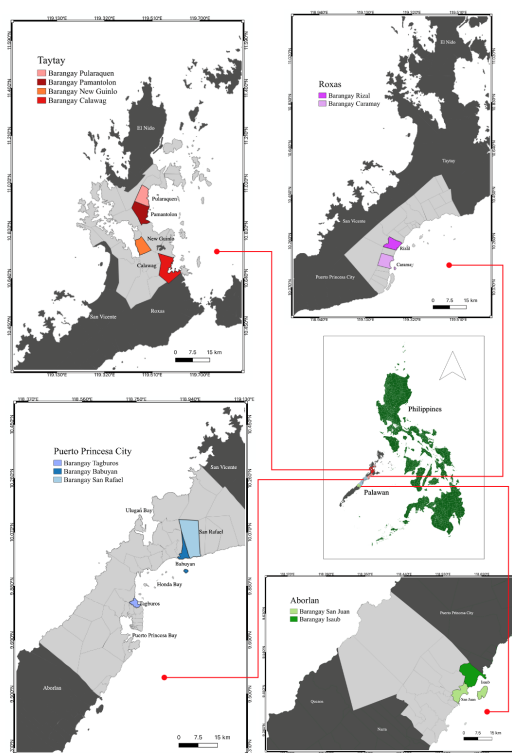
Fig 1. Maps of the study sites in Taytay, Roxas, Aborlan, and Puerto Princesa in Palawan, Philippines

Developing the survey instrument

The survey instrument was co-created by the core researchers and collaborators of EEFFMAP. The core researchers and collaborators have varying field of expertise which include Fisheries Management, Cooperative Establishment, Capture Fisheries, Post Harvest Fisheries, Engineering, Business Management, Marine Biology, Education and Developmental Science. It was conceptualized through consultations and focus group discussions (FGD) with the community leaders, local fisherfolks and aquafarmers in 11 Barangays. The fisherfolks and aquafarmers were chosen by the Barangay as representatives of Barangay Fisheries and Aquatic Resources Management Council (BFARMC). Each focus group involved 10-15 participants.

During the FGDs, we found that fisherfolks' and aquafarmers' livelihoods were greatly affected by the impact of the COVID-19 pandemic due to the limit in activities imposed by the Local Government Unit (LGU) to comply with the Health Protocols. Another issue that emerged is the disease of the seaweeds which affected the livelihood of aquafarmers in coastal areas. With this, venturing into another source of livelihood is a viable option for them to sustain their daily needs. Locals expressed their interest in trying another coastal livelihood; however, they also reiterated that they need more skills and knowledge to realize it. Thus, the survey questionnaire was developed within these premises taking into consideration the technologies and educational materials accessible in the area.

Overview of the Community Survey

The community survey was structured according to six sections. Section 1 explored the challenges and opportunities in developing a cottage industry in coastal communities. Section 2 sought to know the basic information about the involvement of fisherfolks in seaweed farming. Section 3 aimed to know the experiences of fisherfolks and aquafarmers in the processing of aquatic commodities in coastal communities. Moreover, section 4 focused on exploring the

possibilities of establishing a small-scale community-based enterprise. Section 5 focused on entrepreneurship education and technology in coastal communities. We used a scale from 1 (Strongly Disagree) to 5 (Strongly Agree) to gather information about the preferences for educational materials and learning technologies. An option of "don't know/prefer not to answer" (99) was also provided for each of the questions in all of the studies. Finally, the last part of the survey questionnaire was section 6 about the socio-demographic data of the respondents and including age, education, ethnicity, location, and gender.

For this paper, only the data from section 5 (entrepreneurship education and technology) and section 6 (socio-demographics) were used to determine the preferences for educational materials and learning technology of fisherfolks and aquafarmers in selected coastal communities in Palawan. The community survey was piloted by the research staff from the WPU and received ethical approval from the National Ethics Committee of the Philippines.

Survey Participants

The participants of this study were from coastal communities and were restricted to 18 years old and above. They are fisherfolks or aquafarmers as identified by the LGUs. A total of 395 respondents from 11 barangays participated.

Procedure

The research team conducted a face-to-face survey interview between November 2021 to December 2021. Participants were interviewed in an open space of their choosing due to protocols followed during the pandemic. Due to potential literacy issues, it was decided that the most effective way of administering the questionnaire would be through a trained researcher-led face-to-face interview where the Filipino version was used and run using a Computer Assisted Personal Interviewing (CAPI) tool through a portable tablet with interviewers recording interview responses. All tablets are password protected to maintain data security and a list of passwords is stored under secured conditions at WPU Puerto Princesa Campus. Before starting the face-to-face interviews, the survey participants were provided with information sheets explaining the background of the study, and informed consent was obtained.

Data Analysis

The data obtained from the survey were subjected to descriptive analysis and linear regression analysis using Statistical Package for Social Science version 25. For the data to be robust, direct, and easier to interpret, we converted the original 1 (strongly disagree) to 5 (strongly agree) to a three scale of 1 (disagree) to 3 (agree). The same was applied to 1 (very poor) to 5 (very good) scale. It was converted to a three scale of 1 (poor) to 3 (good). Descriptive analysis was used to understand the profiles of the respondents in our survey, and the mean and standard deviation were calculated for questions relating to the preferences of educational materials and learning technologies. Furthermore, Linear Regression Analysis was used to examine how these preferences can be predicted by socio-demographic factors.

Results

Preferences for Educational Materials

Results of this study revealed that the majority of the participants identified listening to a lecture, seminar, and workshop (88.9%) as their preferred medium of learning. This was followed by charts, diagrams, and pictures (82.6%), flyers, calendars, and books (73.5%), video (73.3%), audio (through hearing) (44.7%), and songs, jingles, and chants (35.1%) (Table 1).

Table 1. Summary of respondents' response to preferences for educational materials

Questions	Responses %			Missing
	Disagree	Neutral	Agree	
1. I can quickly memorize information through music (songs, jingles, chants).	134 (33.8%)	117 (29.5%)	139 (35.1%)	6 (1.5%)
2. I remember things that I hear, rather than things that I see or read.	118 (29.8%)	94 (23.7%)	177 (44.7%)	7 (1.8%)
3. I learn easier if the information is presented to me through video.	44 (11.1%)	76 (19.2%)	274 (69.2%)	2 (0.5%)
4. Information is easily retained if I see it in Flyers, calendars, and books.	26 (6.6%)	77 (19.4%)	291 (73.5%)	2 (0.5%)
5. I would describe the video lesson as being highly interesting.	38 (9.6%)	67 (16.9%)	290 (28.8%)	1 (0.3%)
6. Charts, diagrams, and pictures help me understand what someone says.	15 (3.8%)	53 (13.4%)	327 (82.6%)	1 (0.3%)
7. I can remember best by listening to a lecture, seminar, and workshop	3 (0.8%)	37 (9.3%)	352 (88.9%)	4 (1.0%)

Level of Knowledge in Learning Technologies

Generally, most of the participants rated their knowledge of learning technologies as low (Table 2). There are marginal differences in the responses of the participants where 89.4 % of them rated their knowledge of spreadsheets as low. This is followed by low knowledge in word processor (88.1%), then presentation tool (87.4%), the use of laptop (84.1%), internet browsing (78.5%), and smartphones (57.6%).

Table 2. Summary of responses on the level of knowledge on learning technologies

Questions	Responses %			Missing
	Low	Neutral	High	
1. Use of Spreadsheet	354 (89.4%)	25 (6.3%)	11 (2.8%)	6 (1.5%)
2. Use of Word processor	349 (88.1%)	28 (7.1%)	14 (3.5%)	5 (1.3%)
3. Use of Presentation Tool	346 (87.4%)	27 (6.8%)	17 (4.3%)	6 (1.5%)
4. Use of Laptop/Computer	333 (84.1%)	44 (11.1%)	13 (3.3%)	6 (1.5%)
5. Internet Browsing	311 (78.5%)	48 (12.1%)	31 (7.8%)	6 (1.5%)
6. Use of Smartphones/Tablet	228 (57.6%)	104 (26.3%)	62 (15.7%)	2 (0.5%)

Associations between Socio-demographic factors and Preferences of Educational Materials

We explored how preferences for educational materials can be predicted by age, gender, ethnicity, and educational background. The data suggested that only age significantly affected the learning materials preferences among these predictors. In particular, participants between the ages of 39 and 48 years old are more likely to choose video as their preferred medium of learning Moreover, participants between 59 and 77 years old preferred Music as their medium of learning (Table 3).

Table 3. Summary results of regression analysis showing relationships among age, gender, and educational attainment with different educational materials. Asterisk (*) indicates significance at α=0.05

Predictors (Socio-demographic)	Dependent Variable (Educational Materials)					
	Video	Audio	Flyers, Calendars, Books	Charts, Diagrams, Pictures	Music	Seminar-Workshops
Constant (B)	2.483	2.3	2.696	2.828	1.819	2.911
	(0.134)	(0.171)	(0.119)	(0.098)	(0.164)	(0.069)
Age (Ref= 18-28 years old)						
29-38 years old	0.082	0.033	-0.046	0.01	0.152	-0.047
	(0.133)	(0.171)	(0.118)	(0.098)	(0.164)	(0.069)
39-48 years old	0.265*	-0.054	-0.062	-0.076	0.263	-0.057
	(0.13)	(0.167)	(0.115)	(0.095)	(0.159)	(0.068)
49-58 years old	0.128	0.038	0.009	0.013	0.258	-0.041
	(0.133)	(0.171)	(0.118)	(0.097)	(0.163)	(0.069)
59-77 years old	-0.121	-0.052	0.005	-0.017	0.365*	-0.1
	(0.147)	(0.189)	(0.13)	(0.108)	(0.18)	(0.077)
Gender (Ref=Male)						
Female	-0.066	-0.092	0.039	0.004	-0.01	0.02
	(0.071)	(0.091)	(0.063)	(0.052)	(0.087)	(0.037)
Education (Ref=College)						
Secondary	-0.009	-0.146	-0.031	-0.043	-0.081	0.037
	(0.091)	(0.117)	(0.081)	(0.067)	(0.113)	(0.048)
Elementary	0.087	-0.081	0.004	0.006	0.056	0.033
	(0.1)	(0.127)	(0.088)	(0.073)	(0.124)	(0.052)

Associations between Socio-demographic Factors and Preferences of Learning Technologies

We also looked on how levels of knowledge on learning technologies can be predicted by age, gender, ethnicity, and educational background. Results revealed that the level of knowledge on available learning technologies differed by age, ethnicity, and educational background but not by gender (Table 4). Specifically, participants between the ages of 29-38, 39-48, 49-58, and 59-77 years old showed a poor level of knowledge of all learning technologies compared to participants whose ages are between 18-28 years old. Moreover, participants whose educational attainment falls on elementary and secondary levels reportedly have a poor level of knowledge of all learning technologies in comparison with participants who have a college-level educational background. On the other hand, participants whose ethnicity is Tagalog rated their level of knowledge in all learning technologies as good compared to participants whose ethnicity is Visaya.

Table 4. Summary result of regression analysis showing relationships among age, gender, educational attainment, and ethnicity with levels of knowledge in the use of different learning technologies. Asterisk (*) indicates significance at α=0.05

Predictors (Socio-demographic)	Dependent Variable					
	Laptop	Smartphones	Internet Browsing	Presenting Tool	Word Processor	Spreadsheet
Constant (B)	1.715 0.095	2.192 0.148	1.93 0.126	1.699 0.098	1.674 0.092	1.618 0.084
Age (Ref=18-28 years old)						
29-38 years old	-0.221* 0.087	-0.27* 0.135	-0.176 0.115	-0.173* 0.09	-0.205* 0.084	-0.199* 0.076
39-48 years old	-0.323* 0.085	-0.537* 0.132	-0.433* 0.112	-0.313* 0.088	-0.338* 0.082	-0.269* 0.075
49-58 years old	-0.39* 0.088	-0.814* 0.138	-0.566* 0.117	-0.372* 0.092	-0.404* 0.085	-0.331* 0.078
59-77 years old	-0.434* 0.104	-0.989* 0.162	-0.594* 0.137	-0.394* 0.107	-0.409* 0.1	-0.349* 0.091
Gender (Ref=Male)						
Female	0.018 0.048	0.127 0.074	0.014 0.063	-0.019 0.049	-0.041 0.046	-0.04 0.042
Education (Ref=College)						
Secondary	-0.381* 0.059	-0.239* 0.093	-0.35* 0.078	-0.349* 0.061	-0.315* 0.057	-0.343* 0.052
Elementary	-0.366* 0.066	-0.533* 0.103	-0.449* 0.088	-0.383* 0.069	-0.318* 0.064	-0.326* 0.058
Ethnicity (Ref=Visaya)						
Tagalog	0.154* 0.061	0.195* 0.096	0.126 0.081	0.129* 0.063	0.122* 0.059	0.075* 0.054
Cuyuno	0.022 0.058	-0.003 0.09	-0.043 0.077	0.03 0.06	0.057 0.056	0.049 0.051
Tagbanua	0.098 0.197	-0.101 0.308	0.198 0.261	0.135 0.205	0.177 0.19	-0.024 0.174
Ilonggo	0.051 0.102	-0.011 0.16	0.086 0.136	0.054 0.106	0.095 0.099	0.018 0.09
Number of years lived in coastal areas (Ref=1-15 years)						
16-30 years	-0.007 0.054	0.219* 0.085	0.018 0.072	-0.016 0.056	-0.026 0.053	-0.005 0.048
31-45 years	-0.08 0.072	0.207 0.11	0.057 0.094	-0.038 0.074	-0.041 0.069	0.024 0.063
46-65 years	0.093 0.095	0.249 0.149	0.01 0.126	-0.049 0.1	-0.032 0.092	0 0.085

Discussion

It has been established that entrepreneurship education can stimulate entrepreneurial intention for business creation needed in coastal communities in Palawan. The premise of this study came from the idea that in educating locals through entrepreneurship education, using a medium of their preference should be taken into consideration. Results of this study revealed that the majority of the participants identified lectures, seminars, and workshops as their highly preferred medium of learning. Lectures, seminars, and workshops have a long history of being used as a teaching method since the time of Socrates for their value in engaging participants in the teaching and learning process (Al'Adawi, 2017). In this manner, participants can also be contributors to shaping knowledge by interactively bringing their experiences, identities, and values into the learning and teaching process (Bates, 2016). This is particularly true in coastal communities where we have conducted lectures, training, and workshops where participants were interactive in sharing personal experiences and skills. What they like about this form of learning is the ability to ask immediately when particular topics are not understood. Lectures, seminars, and workshops have been investigated for their effectiveness in different fields: education, medicine, business, and at different levels: school, university or professionals, and community (Weber et al., 2007; Polly et al., 2012; Yildirim, 2010). These studies found that these methods have positive effects on different individuals and in different fields.

Participants of this study also preferred charts, diagrams, pictures, flyers, calendars, books, and videos as learning materials. In the teaching and learning process, these are collectively called visual aids. Visual aids arouse learners' interest and help educators explain the concepts easily. These sensory objects or images initiate stimulation and support learning and can be used to make the learning experience more real, accurate, and active (Rather, 2004). According to the participants, these materials can be brought home for them to read and use again should they forget details of particular subjects. In addition, they can also share it with their family members so they too may learn. In particular, the use of video as a learning tool is also beneficial for them. As Mendoza et al. (2015) discussed, videos boost learners' creativity and cooperation and help motivate learners to create a distinctive context for their learning experience. Interestingly, when we explored how these preferences can be predicted by age, gender, ethnicity, and educational background, the data suggested that among these predictors, only age significantly affected the learning materials preferences. Specifically, participants whose age are between 39-48 years old prefers video while 59-77 years old participants prefer music. Earlier findings from Truluck et al. (2010) found that there is a change in preferred learning mode as people age. The study also revealed that older adults aged 66 and above prefer learning by watching and listening. A study by Ahmad (2022) explains that as people get older, their cognitive ability also tends to decline which makes their attention span and ability to focus shorter. Thus, they gravitate towards learning materials that are audio-visual since those arouse their interest.

There are marginal differences in the responses of the participants as to their knowledge of the use of different learning technologies. The majority of them rated their knowledge of the use of spreadsheets, word processors, presentation tools such as PowerPoint, use of laptops, internet browsing, and the use of smartphones as poor. As mentioned earlier, coastal communities in the Philippines, like in Palawan, are among the most economically marginalized sectors. For some areas, electricity and connectivity are absent. These could be the reasons why most of the fisherfolks and aquafarmers don't have computers, and so the use of computer-based technologies is also not learned.

According to Robinson and Unwin (2021), access to both connectivity and electricity is essential if any digital technologies are to be used effectively for learning. Without these, it is worthless even considering the use of digital technologies for education. In addition, learning technologies are quite expensive. It is difficult for many fisherfolks and

aquafarmers to acquire these kinds of gadgets because for most of the participants, meeting the basic needs of the family is more important than having digital technologies.

It was also found in this study that levels of knowledge can be predicted by age, educational background, and ethnicity. Participants in all age groups except participants whose age group is between 18 and 28 years old reportedly have a poor level of knowledge of all learning technologies. The study by Olson et al. (2020) suggests that this occurrence can be due to the differences in the frequency of use of technology among older adults and young adults. Older adults do use technologies similar to their younger counterparts, but younger adults reportedly use most of the technologies more frequently than older adults. Broady et al. (2010) explained that older adults tend to be selective when it comes to technology. Younger adults raised with computers tend to rely on the internet and other computer programs to meet their needs such as socializing, self-fulfillment, learning, or relaxation while older adults are more likely to meet these needs in more traditional manners, such as visiting friends, watching television, reading, and gardening (Renaud & Ramsay, 2007). This implies that in order to encourage older adults to use technology, they have to be aware first that certain technology is beneficial and necessary for their way of life (Eisma et al., 2004; Selwyn, 2004; White & Witherwall, 2000). Specifically, in Palawan, older adult fisherfolks and aquafarmers in coastal areas whose everyday routine revolves around catching and growing aquatic commodities might perceive technology as insignificant to their livelihood and lifestyle

Self-efficacy also plays an important role in the decision of older adults to engage in technology. Data from the study of Garland & Noyes (2005) showed that attitudes toward learning computers can be better measured by confidence in learning from computers. This confidence appears to be based more on the nature of the experience. It is critical to ensure that older people receive encouraging feedback during training and experience some levels of success (Czaja et al. 2006) while navigating learning technologies.

In this study, participants whose educational background falls on the elementary and secondary levels reportedly have a poor level of knowledge of all learning technologies in comparison with participants who have reached college level. According to Vasilache (2016), computer literacy education is an integral part of early university education. Activities and academic requirements in higher education highly involve computer skills and therefore it is expected that college-level students are more knowledgeable in computers. Though it could be argued that elementary and high school students nowadays are immersed and well-versed in technology, it is good to note that the average age of most of the participants in this study is 44 which means that they were in elementary and high school over 30 years ago where education system did not employ these technologies yet and computers were still not widely available, especially in schools in rural coastal communities. In addition, the educational system in elementary and high school in the Philippines, where most of the fisherfolks attended, used computers on a limited scale. The data from the UNESCO Institute for Statistics (2021) shows that among Eastern and South-eastern countries, the Philippines belongs to countries with very low school access to computers and the Internet.

Furthermore, participants whose ethnicity is Tagalog rated their level of knowledge in all learning technologies as good compared to participants whose ethnicity is Visaya. The location of residence plays an important role in this result. Most of the participants who are of Tagalog ethnicity come from coastal areas of Puerto Princesa City and New Guinlo, Taytay where access to electricity and the internet is present. According to Owate et al. (2017), accessibility and availability of e-learning resources can be a factor in the learning process. Having access to e-learning enhances the acumen for acquiring knowledge and those without or limited access are prone to scarce knowledge of e-learning resources. In summary, participants whose ages are between 18-28 years old, with an educational background of college-level, and who are Tagalog tend to have more access to learning technologies than the rest of the groups.

Conclusion and Implication

This study concluded that the majority of the participants identified listening to a lecture, seminar, and workshop as their highly preferred medium of learning. Also, the majority of the participants claimed that their level of knowledge in using spreadsheets, word processors, presentation tools, laptops, internet browsing, and smartphones is generally poor. Among the age, gender, ethnicity, and educational background as predictors of preferences, only age significantly affected the learning materials preferences. On the other hand, the level of knowledge on available learning technologies differed by age, ethnicity, and educational background but not by gender.

The current study offers an insight into how the local fisherfolks and aquafarmers in the coastal communities in Palawan wanted knowledge to be communicated to them. Preferences for educational materials and learning technologies along with the socio-demographic profiles of the participants should be taken into consideration for the effective communication of knowledge. However, we do not promote solely the use of one mode of education. We still acknowledge that one size does not fit all, and all modes of learning should be utilized in any learning environment. However, identifying learning preferences, and prioritizing and incorporating them into learners' learning activities is an important move in encouraging them to be interested in their own learning. We will be using this information as we deliver our entrepreneurship education to these communities. Moreover, our results can be useful to other entities in designing and implementing educational programs in the coastal communities in Palawan.

Recommendations

In crafting different learning materials for the fisherfolks in the coastal areas of Palawan, our study has shown that consideration of the age of the learners should be prioritized. Although lectures through seminars and workshops emerged in our data to be most preferred by the fisherfolks and aquafarmers, those whose ages are between 39-77 years old were revealed to gravitate more toward audio-visual learning materials such as videos and music. Thus, creating music videos, and lecture videos for these age groups is recommended. However, listening to and watching videos requires technology. Our study found that those whose ages are between 18-28 years old, with an educational background of college-level, and who are Tagalog tend to have more knowledge of technology than the rest of the groups. Consistently, most of the fisherfolks who do not belong to the 18-28 age group, never attended college also. This shows that training workshops on how to navigate or use these technologies should be implemented to have the capacity to utilize the educational materials given to them.

These fisherfolks in coastal areas aimed to form a cooperative and start a business. To do this, knowledge of cellphones, laptops, Microsoft Word, Excel, and even PowerPoint presentations is essential. In this age of technology and invention, a lack of basic knowledge of technologies might hinder them from learning entrepreneurship and managing their business conveniently. It is interesting to note as well that our data says that fisherfolks of Tagalog ethnicity have more knowledge of technologies. When we go back to our data, we found that these Tagalog fisherfolks reside in coastal areas that have accessibility to electricity and internet such as three Barangays in Puerto Princesa (Tagburos, Babuyan, San Rafael) and New Guinlo, Taytay. We recommend that all fisherfolks in 11 barangays except the barangays mentioned above should be prioritized in training for these technologies.

Ethics Statement

This research study which involved human participants was reviewed and approved by the National Ethics Committee of the Department of Science and Technology, Philippines (2021-023-Creencia-Palawan). The participants provided their written informed consent to participate in this study.

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