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PUTTING EMPATHY AT THE CENTER OF INSTRUCTIONAL DESIGN PROCESS IN EARLY CHILDHOOD: DISMANTLING AND RE-CONSTRUCTING PERSONAS

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ABSTRACT

Putting empathy at the center of instructional design process is considered to result in superior learning experiences for learners as the materials designed this way address their specific learning and developmental needs. Designing with empathy requires the use of realistic personas in order to keep the exercise focused, and to enable the designer to "walk in the shoes" of the intended learners. But personas are versatile constructs that need to be constantly revised and updated to reflect the evolving needs of the people they represent. This is particularly true in early childhood where changing environmental factors due to the restrictions imposed by the covid-19 pandemic have led to changes in the social development of preschoolers, changes in teaching strategies, and a requirement for a dispersed, individually-focused approach to teaching and learning. The framework proposed here will enable instructional designers to construct relatable personas that reflect realistic learner needs

as well as identify pain/need areas in individual learners that would require that materials and teaching strategies be tailored to address them.

INTRODUCTION

An increasing number of researchers and policy makers are coming out to speak against the lack of empathy in the design of policies and systems and how they fail to address the needs of the people for whom they are intended (Sosa, 2019; Devecchi & Guerrini, 2017; Fulton, 2003; Kouprie & Visser, 2009). Researchers are calling for a user-centric approach to designing products that recognize users' diversity and the heterogeneity of their needs, and provide multiple ways of addressing these needs. In the case of schools, instructional designers are tasked with the responsibility to design materials that recognize that commonness in learners is a misnomer, and that learners bring to the learning activity socio-cultural, emotional and cognitive, attitudinal as well as perceptual characteristics that set them apart from one another in the ways that they receive, perceive, process, understand and interpret educational materials (Sosa, 2019). Researchers argue that these factors should be factored in the design process so that the end product is appropriately tailored and adaptable to the needs of as many learners as is possible.

One of the ways by which we can recognize the diversity in learners' needs and capabilities is by placing less importance on normative assessments as a measurement of learner competence. Because different learners learn differently, and may require different lengths of time to accomplish learning activities, we may have to move away from curtailing their learning processes by prescriptively scheduling how long learners should interact with learning materials in order to master the desired skills (Gronseth, Michela, & Ugwu, 2021). To do this, we would need to use the tenets of empathic design processes in the ways that we plan for, and design instructional materials, so that we have a realistic idea of the caliber of the learners we have, their biographies as well as how their experiences will be like when they interact with the instructional materials under the prevailing environment (CAST, 2018).

But, to do this will require no small measure of concerted effort and time in the planning process. A popular way of developing empathic instructional material is by constructing learner personas in order to envision different factors that will affect, impact or hinder the interaction of the intended learner with the instructional materials (Goh, Kulathuramaiyer, & Zaman, 2017). If the materials are developed specifically to address the learners' needs (using empathic processes of research, immersion, and withdrawal) they will provide multiple access points, different ways by which learners may interact with the materials as

well as catering for environmental factors that may inhibit access and understanding. Designing learner personas is itself an intricate process that is dependent on many factors including available time, resources, and the nature of the materials to be designed among other factors (Grudin, 2006).

The change of learning environment brought about by the health-related restrictions due to the Covid-19 pandemic has changed a lot of our perceptions about how we should teach our preschoolers, what teaching techniques are possible to implement, bearing in mind the safety of both our teachers and the learners, and in most cases, the content of the lesson itself. The pandemic related uncertainties transcend the family and school boundaries and therefore necessitate the inclusion, in the lesson, of new approaches and new content that is designed for a dispersed instead of intimate and group-based learning activities. The restrictions are also directly changing the social habits and social development of the children. Furthermore, the pandemic related restrictions curtail the use of peer-guided learning, and have led to increased promotion of silo approaches to learning among learners. Notably, this has resulted in an increase in the attainment gap between learners, therefore making it necessary for designers and teachers to recalibrate their strategies (both of designing instructional material and teaching) in order to take these factors into consideration.

These changes should be reflected through changes in the personas of the learners for whom our instructional materials are intended. Such changes, therefore, necessitate a re-think of the conceptions we have about our learners in order that we re-design new personas that match the current dispositions of our learners. It is after the dismantling of the old personas, and the creations of new ones that our instructional materials, awash with new content and new teaching techniques, can address the evolved learning needs of our intended learners (Cross, 2011). To this end, we propose a framework for the construction of learners' personas at preschool, in order to guide the design process for instructional materials that are as relevant to the current users' dispositions as they are adaptable to the changing learning environments and requirements.

In order to do so we begin by addressing fundamental questions such as how, then, we can put empathy at the heart of the instructional design process when designing for preschoolers, particularly taking into account the restrictions brought about by the Covid-19 pandemic? What factors should we consider? How should we design the persona of the intended recipient of our instructional material? But first, we look in more depth at the construct of empathy and how it intertwines with our objectives of designing materials that address the learning needs of preschoolers.

Empathy

The notion of empathy in design as it is portrayed in contemporary research is that designers can "walk in the shoes" of others, that is, designers can develop a deeper understanding of users by, for instance, observing them interact with the product so that they develop empathic

knowledge of this experience in order to guide improvements in the design process, and a better experience for the end-user (Kouprie & Visser, 2009; Mattelmäki, Vaajakallio, & Koskinen, 2014). Within instructional design, it entails the ability to envision how the learner will interact with the learning material, first, by identifying the kinds of learners for whom you are planning, and then catering for the needs of these learners by taking into consideration their learning needs, how they learn, environmental factors as well as individual learner profiles in order that the end product is accessible and beneficial to as many of the learners as is possible (Gronseth, Michela, & Ugwu, 2021).

Gronseth, Michela, & Ugwu (2021) argue that designers can develop empathic understanding of the target learner by,

Project(ing) themselves into the viewpoint of a target learner in order to envision what his/her experience within the planned instruction might be like. To do so, designers can imagine how learners with various characteristics and abilities would experience the exercise, activity, or lesson and where they may encounter barriers, misalignments, or other frustrations (p.3).

Empathic understanding of the target learners is considered to "widen the empathic horizon" of designers- that is, it enriches the designers' understanding by taking them outside their comfort zones so that they understand the emotional and functional experiences that their target learners have when interacting with the materials (Fulton, 2003). When an effort is made to design material that recognizes and addresses the diverse learning needs of all learners such an approach is considered a Universal Design (UD) approach, which Null (2014) defines as "ways of thinking about and designing environments and products that work for the greatest number of people possible"(p.2). Story, Mueller, & Mace (1998) indicate that [instructional] designers who put empathy at the center of their design processes apreciate the value of collaborative participation by learners, and validate designing with instead of designing for, as the best option to adequately address the learners' needs and the constraints that may inhibit proper access, use and understanding of instructional mateirals. This sentiment is supported by research by Devecchi & Guerrini (2017), Gerrard & Sosa (2014) and Sosa (2019) who note that there is a shift in research from a utilitarian discussion of empathy to a more engaging depiction that results in reciprocal change for the designers as it is on the users. (Alam,2015).

In early childhood, in particular, collaborating with learners in order to address their learning needs is a daunting task, fraught with heavy dependence on nomative and entrenched perceptions about what children at that age should learn and how they learn. There is often a narrow scope of what such instructional materials can and should accomplish, or the capacity to call to question teaching methods that no longer adequately address the learning needs of children. The established modus operandi in early childhood classrooms, particularly in developing countries, such as in Botswana, Zambia and Namibia, where early childhood education self-

regulates with limited government oversight, is that instructional materials are design based on age clusters. For these reasons, instructional materials for learners often show indications that it is designed to address commonalities in learners, and is seldom designed to address specific needs of individual learners (Islam, 2015). For instance, mobility bound learners, such as those on wheelchairs, often have to participate vicariously in play activities that require a lot of physical movement because no consideration was given in the design stage to how they would be included. This scennario puts a lot of importance on personas as the best way to design instructional material that reflect the characteristics of intended learners, and as a starting point to think of impediments that can hinder complete inclusion in early childhood classrooms (Gilliard-White, 2014).

Learner personas

As already alluded to above, there are limited signs that detailed and deliberate use of learner personas in early childhood is widespread. But the use of personas in general, and in educational settings in particular is not a new phenomena. Although designers have popularized the use of end user personas to justify design decisions and to tailor products to user specifications, the practice has remained largely underdeveloped in educational settings, and when used it has played peripheral roles. Curriculum designers have largely relied on traditional practices of designing curriculum and instructional material that target an average student, and relied on the perception that such materials will perform adequately for students at the extreme ends of the performance spectrum (low performers and high performers). Such practice promotes the notion that students have common needs that can be addressed by common means (Rose, 2015). But research proves otherwise. Although students may have common needs and challenges as a group, they still have individual preferences that are informed by subjective perceptions and attitudes and would required solutions that are specifically tailored to address them (Rose & Strangman, 2007; Tomlinson, 2017).

In early childhood, in particular, the use of well-developed personas to guide instructional design is neglected in schools, and is largely absent in the curriculum of teachers training colleges (Chapman & Milham, 2006). Anecdotal evidence indicates however, that early childhood teachers develop rough guidelines in the place of personas in order to serve as reference during the development of instructional materials. Such a sketchy guide is inadequate in addressing pertinent students' needs, anticipating challenges and finding alternative ways of addressing any misalignments, and hiccups. As already indicated earlier, in developing countries the design of instructional material for early childhood has almost always been based on age clusters, with little or no indication of adaptability to students needs. Such a priori design of instructional materials are inadequate in catering for the needs of the modern learner

and are less so in promoting inclusion through empathic processes (Trafí, 2008).

While the ongoing pandemic has brought great disruptions to teaching and learning in all levels of education, it has created a rare opportunity for all education systems to reinvent themselves by planning for uncertainty, and by tailoring instructional materials to realistic learners needs for maximum benefit. This is particularly important in early childhood as it will develop a good foundation for learning.

Researchers agree that developing personas should be based on accurate information derived from research or experience with the intended users or target learners (Rose & Strangman, 2007; Stradling & Saunders, 1993). Researchers indicate that such personas should be well developed and be a credible representation of the target learners; it should contain demographic features, highlight the learner's abilities, challenges, cognitive capabilities, motivational factors as well as ways that will be used to assess if the instructional material has done what it was intended to do. In homogeneous communities where learners share ethnic as well as socio-economic characteristics the design of personas is perhaps less laborious than in metropolitan areas where learners have diverse demographics and socio-economic profiles. However, the proposed framework is adaptable to different scenarios and will serve designers well in both situations (Islam,2015).

MAPPING NEW PERSONAS

We begin by acknowledging that there is no single way of constructing learner personas; in early childhood or anywhere else. But we believe that the first step must entail developing points of reference that will guide the development of personas. That said, we propose a five-part framework for constructing learner personas in early childhood. These five broad parts are demographic, access, affective factors, cognitive factors and evaluation. Demographic features should include sex, age, race, and socio-cultural factors, religious and other factors that may be deemed by context to be necessary in guiding the instructional design process (Islam, 2020).

Access includes the environment in which learning will take place. This includes, among other things, the capacity and ability of the target learner to access instructional materials. It also could include the platforms that will be used to deliver the material, such as computers, smartphones, projectors, teaching aides and games, play-based teaching, collaborative learning, songs, as well as many other creative ways that are at the disposal of the teacher. In the case of computer-medicated learning, access should take into consideration whether the software or learning management system (LMS) used is accessible by the learner. For instance, learners who, due to albinism or other conditions, are unable to use the standard software should be provided for by installing the software that they can use. Access also includes the physical environment and how accessible it is for all learners, and whether considerations will need to be made for learners whose participation and access is inhibited by furniture

arrangement, access to computers labs, or the use of certain teaching aides. It has been found, for instance, that seemingly negligible things like the positions and height of door locks, and the direction that students face in a classroom can have tremendous impact on the ability of learners to access learning spaces and on how conducive the learning spaces are to facilitate learning, respectively.

Affective factors on the other hand deal with the feelings of the learners (Vreeke & van der Mark, 2003). Research indicates that there is a correlation between learner feelings and their participation in learning activity. Naturally, learners will be drawn to topics that evoke positive feelings in them, while they will be less so enthusiastic about topics that evoke negative feelings. Feelings inform learner perceptions; therefore it is important to factor affective characteristics when constructing learner personas so that the teachers can device teaching strategies that will develop positive perceptions and enhance learning. Anticipating learners' feelings in relation to teaching and learning and finding mitigating strategies is important in the design process (Thomas & McDonagh, 2013). Learners may have feelings of frustration, anxiety, helplessness, or anger due to the content of the lesson, teaching strategies, activities that are used to teach or due to the groups in which they are organized to undertake a learning activity. An empathic designer eliminates factors that may trigger these feelings through "immersing himself/herself" in the situation of the learners and therefore is able to understand how learners would feel when interacting with the materials (Hall, 1997)..

Cognitive factors have to do with students' ability; how they learn, how they interpret information and how best such material may be designed, and taught in order to address individual learner needs (Baron-Cohen & Wheelwright, 2004). Research indicates, for instance, that learners approach learning materials differently due to a host of other factors. In order to cater for these unique cognitive abilities and characteristics in the design process it is important to consider them in the construction of personas, and to device strategies that can be used to address them (McDonogh, 2015).

Lastly, it is important to consider how learning will be evaluated when designing personas. One-size-fits-all evaluation strategies are ineffective since they do not recognize the learners' unique learning abilities, physical capabilities and many other factors that have been found to set learners apart. For example, a wheelchair-bound learner would require a different evaluation strategy in an activity that requires physical activity. The same can be said about many other factors that require that the instructional material and how it is delivered be modified to address the learner's unique attributes. As long as learners' differences are recognized and addressed in the design process there will always arise the need to differentiate assessment of competence.

For every persona constructed there are pain points (Fulton, 2003) which represent the areas where learners may experience difficulties, problems, need intervention or experience obstacles that keep them from

accessing, receiving and understanding the instructional materials. These points are important as they represent the unique learner needs that set the learner apart from others and require that the material and how it is delivered be tailored to address them (Harris, 2018). Pain points are the basis for using emphatic design processes. Table 1 represents the summary of the five parts involved in designing a framework for learner persona in early childhood.

Table 1: Summary of the five parts in the design of learner persona and their pain and remediation considerations

Considerations		Possible barriers to instruction (Pain points)	Remediation
Demographic factors	Age Sex Ethnicity Socio-cultural factors Religion Language differences Gender-based power dynamics	Religious and cultural gender and power dynamics that may predetermine learner participation Language barrier Too young for the kind of lesson activity Unsuitability of activity for a specific gender (because of cultural orientation) Possible ethnic barriers to lesson comprehension	Develop culturally & religiously sensitive instructional materials Design age appropriate material Address ethnic barriers through Universal design principles Address language barriers if the design of instruction
Access factors	Computer literacy Access to computers Physical requirements of learning activities Accessibility of learning activities Stairs and other spaces Mobility requirements	Limited or no access to computers Computer illiterate Inappropriately designed learning spaces Hindered access to learning activities Mobility challenges, excessive	Design material that can be accessed without the need to be computer literate Create spaces that enable students access Match mobility needs

		mobility requirement	with students capabilities, and differentiate requirements for mobility challenged students
Affective factors	Attitude of learners to topic Emotional state of the learners Attitudinal cues Learner disposition	Frustration and other forms of dislike for learning Detached from class activity Poor motivation Excessive attention seeking Destructively competitive Selfish, bullish	Create exciting material that proactively engages the learners Design material that encourages full participation of group members, each with their own part to play Encourage sharing through classroom activities
Cognitive factors	Comprehension level Communicative development level Reasoning level Competence Numeric competence Problem solving level	Learning challenges or other forms of impairment Poor numeric, reasoning, problem solving competence Poor comprehension Low communication development level	Design material that is easily eligible, uses the right medium to enable learner access Match the difficulty level to the learner's abilities, provide multiple access points to

			instructional material
Evaluation: identify evaluation of competence strategies and how evaluation will be differentiated to address specific child needs and requirements. Where special arrangements need to be made to enable the learner to perform the necessary skills such arrangement should be planned for, and made accessible to the learner. Assessment should be criterion-based in order to test what has been taught the child specifically in line with his/her capabilities.			

A recurring argument in the literature on instructional design is the place and role of assessment in the design process. While some researchers indicate that how learning will be evaluated should come first, and guide other components of the design process some indicate that designing evaluation strategies should be informed by what has been taught, and how it has been taught. Designing evaluation strategies after the design process would reflect the differentiated teaching strategies used in the classroom and would appropriately reflect how teaching and learning took place. Whether designing with the guidance of evaluation strategies or fitting the evaluation at the end of the design process the proposed framework indicate a non-linear persona construction process that requires constant revision and alteration as learners who share similar attributes are grouped together (Gildersleeve, 2010).

Except in cases where extreme intervention is required, the framework should also enable teachers to organize learners into cooperative learning groups, guide in varying difficulty level of the lesson, help in time allocation for learning activities and also help in the allocation of resources.

CONCLUSION

Putting empathy at the heart of instructional design requires a deliberate and time consuming study of the characteristics of the intended learner in order to guide the design process. Learner attributes and preferences play a vital role in determining whether effective teaching and learning takes place. It is no longer adequate to design instructional materials that target commonality in learners; the voice of the learner, in the form of a relatable persona, should collaborate with the instructional designer to address the versatile learning needs of individual learners. Designing with, instead of designing for learners has been proven by research to be the best way to plan for and address possible challenges that may inhibit proper learning. But putting so much effort in the design process is only half of the work; the other half entails differentiating assessment of competence in order to recognize that different learners may require different lengths of time to accomplish competence. If a single assessment strategy is implemented, with no regard to differentiated teaching strategies used, we will find that

we are assessing for what we do not teach, and teaching what we do not assess.

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