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ORIGINAL PAPER

Exploring the dominant learning styles of adult learners in higher education

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Abstract

In today's complex and knowledge-driven world, the quest to pursue and acquire information and skills to enable one to be useful in society is not limited to young learners; many older adults also actively seek to acquire new knowledge and skills. The study presented in this article aims to establish the characteristics and dominant learning styles of adults enrolled in a diploma programme at an institution of higher education in Ghana. In a qualitative case study approach using a homogenous sampling technique, 21 students (aged 27–54, 10 female, 11 male) were asked to fill in a learning styles questionnaire and to participate in focus group interviews. Based on these participants' responses, the study found three learning styles to be dominant: *pragmatist, reflector* and *theorist*. An interesting finding was the absence of a fourth type among participants, the *activist* learning style. Since it is clear that not all adult learners engage well with the typical theoretical and conceptual content that is taught in higher education institutions, understanding these four adult learning styles should inform higher education policies in order to make learning equally enjoyable and maximise effective learning for all four types of adult learners. Other significant findings of this study open up avenues for further research on how an understanding of learning styles can be used to enhance learning by adults.

Keywords Ghana · learning styles · pragmatists · reflectors · theorists · transformative learning theory (TLT)

Résumé

Examen des styles d'apprentissage dominants chez les apprenants adultes dans le domaine de l'enseignement supérieur – Dans le monde d'aujourd'hui, complexe et fondé sur la connaissance, la quête d'informations et de compétences permettant d'être utiles à la société n'est pas exclusivement le fait de jeunes apprenants; les adultes plus âgés sont eux aussi nombreux à chercher activement à s'instruire et à

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acquérir de nouvelles compétences. L'étude présentée dans cet article a pour objectif de déterminer les caractéristiques et styles d'apprentissage dominants chez les adultes inscrits à un programme diplômant dans un établissement d'enseignement supérieur au Ghana. Dans une étude de cas qualitative s'appuyant sur une technique d'échantillonnage homogène, il a été demandé à 21 étudiants (âgés de 27 à 54 ans, dont dix femmes et onze hommes) de remplir un questionnaire sur le style d'apprentissage et de prendre part à des entretiens dans le cadre de groupes de discussion. S'appuyant sur les réponses des participants, l'étude a déterminé trois styles d'apprentissage dominants : *pragmatique*, *réfléchi* et *théoricien*. Parmi ses résultats, il est intéressant de noter l'absence d'un quatrième type chez les participants : le style d'apprentissage *actif*. Étant donné qu'il est clair que les apprenants adultes ne sont pas tous à l'aise avec les contenus théoriques et conceptuels enseignés dans les établissements d'enseignement supérieur, comprendre ces quatre styles d'apprentissage devrait servir à alimenter les politiques de l'enseignement supérieur pour permettre aux quatre types d'apprenants adultes d'apprendre avec le même plaisir et de maximiser l'efficacité de l'apprentissage. Des résultats importants de cette étude ouvrent aussi de nouvelles voies pour approfondir la recherche sur la façon de comprendre comment on peut tirer profit des styles d'apprentissage pour améliorer l'apprentissage des adultes.

Introduction

Most early efforts to understand how humans learn concentrated on children. However, from the 1960s onwards, interest in adult learning gained momentum as it became clear that adults learn somewhat differently from children. An important milestone was Malcolm Knowles' (1980) seminal introduction of the concept of *andragogy,* meaning the study of how adults learn. Knowles' work has played a significant role in shaping our understanding of adult learning (Knowles et al. 2005), but there is still much to learn about how learning styles influence adult learning.

Learning styles have been described by Poonam Kharb et al.(2013) as

> an individual's preferred method of gathering, processing, interpreting, organising and analysing information (ibid., p. 89).

In recent decades, numerous researchers, including Jannette Collins (2004) and Jessica Li et al. (2018), have argued that educators need to understand adults' different learning styles so they can tailor their method of instruction to suit adult learners' individual characteristics. Similarly, after evaluating the educational system of the United Kingdom, the National Committee of Inquiry into Higher Education recommended that:

> with immediate effect, all institutions of higher education should give high priority to developing and implementing learning and teaching strategies which focus on the promotion of students' learning (Dearing 1997, p. 42).

The above recommendation may have been intended to create more effective educational systems, but without prioritising the learning *styles* of learners, its potential for success is likely to have been limited.

Empirical findings from a study conducted by Pat Cartney (2000) in the United Kingdom showed that students considered their teachers to be ineffective when their teaching styles were asymmetrical to the students' learning styles. In a quantitative study carried out in Australia, Bill Tucker (2009) established a significant relationship between the learning styles of students and year of learning, as well as other variables. Various scholars (e.g. Honey and Mumford 1986; Jarvis 1995; Kolb 1984; Merriam and Bierema 2013) have explored how practitioners use their understanding of learning styles to adapt their methods of instruction, how adult learners adopt certain learning styles, and some investigated the effects of following certain learning styles.

In spite of the strong arguments made by some researchers for the benefits of considering learning styles, contrasting views have also emerged. For instance, John Vorhaus (2002) argues that there is insufficient evidence to warrant interest and investment in learning styles. Further, Elaine Hall and David Moseley state that

> some authors claim to follow certain theoretical traditions and would appear, from their own description, to belong in one family, while the application of their learning styles model might locate them elsewhere (Hall and Moseley 2006, p. 247).

The same authors also stress how theorists like William Herrmann relaxed their positions on fixed learning styles at some point. This indicates that a practitioner's pedagogical stance may change based on factors present within the context of teaching and learning. This may also be interpreted to mean that adult learners do not in fact have a single, fixed learning style. Rather, they have a dominant learning style at any point in time, contingent on the situation and context.

Attempts to justify instructors' use of learning styles as ways of improving students' learning through individualisation have also been challenged. In a meta-analysis conducted by John Hattie (1999), it was reported that the effect size of learning styles on individualisation was only 0.14. Also, Steve Higgins and Elaine Hall (2004) reported on the average effect size of learning styles on both cognitive and curricular outcomes and found a result of 0.7. It is apparent in both cases that the adaptation of learning styles did not have a significant effect on the variables studied. Much of the criticism of the research on learning styles may also derive from the overlap between learning styles, though this criticism potentially pushes the debate over the importance of adult learning styles further.

There is no gainsaying that knowledge of adult learning styles is of prime importance in educational research. At the global level, most studies conducted on adult learning styles have been quantitative, and many come from the medical sciences (e.g. Astin et al. 2006; Kharb et al. 2013; Manolis et al. 2013). Others are critical reviews of literature (for example, Kumi-Yeboah and James 2012; McGlone 2011). Alex Kumi-Yeboah and Waynne James (2012) found that little research had been

conducted on adult learners' preferred learning styles. One of the few studies of this topic in recent times was undertaken by myself and two colleagues (Amponsah et al. 2017). Apparently, there is a need to dig deeper into the phenomenon in order to fill a gap in the literature.

This study I present in this article explores the characteristics and dominant learning styles of diploma students at a Ghanaian higher education institution. The participant students were different from traditional students in that they had entered university through mature entrance examinations for people above the age of 25 who do not possess the requisite grades for direct admission to university. Nine of the participants were lower-level employees such as cleaners, clerks, secretaries and sales people, five were into petty trading, two had their own vibrant businesses, while the remaining five were unemployed. These students may have unknowingly switched from one learning style to another as they engaged in different courses and with different instructors each semester.

The main qualitative instrument applied in this study was Peter Honey and Alan Mumford's (1986) learning styles questionnaire, which Hall and Moseley (2006, p. 247) regard as one of "the thirteen potentially influential models of learning styles". The research questions I sought to address in this study were:

(1) *What are the dominant learning styles adopted by adult learners?*
(2) *How do specific contexts influence the learning styles of adult learners?*

I begin the main part of this article with a discussion of the theoretical framework, followed by a literature review. Next, I describe the methodology of this study, before presenting my research findings. After a discussion of these findings, the article ends with a conclusion, highlighting the importance of understanding the different learning styles and factoring them into policies which enable all adults to enjoy their education.

Theoretical framework: transformative learning theory

The study I present in this article applies Jack Mezirow's *transformative learning theory* (TLT; Mezirow1978) to elaborate on the dominant learning styles of adult learners in a Ghanaian university. As noted by Anna Laros et al. (2017), TLT applies only to adults and is based on theories of human communication. Mezirow stated that

> learning is understood as the process of using a prior interpretation to construe a new or revised interpretation of the meaning of one's experience in order to guide future action (Mezirow 1996, p. 162).

Mezirow's theory (1994) is *constructivist*[1] in the sense that ways in which learners interpret and reinterpret their experience are central to the meaning they make,

[1] Constructivism refers to a learner's experience of finding out how elements of knowledge are "constructed" and how they are related to items of knowledge s/he is already familiar with.

hence the pre-eminence of *disorienting dilemmas*[2] in TLT. Mezirow's interest was in people's world views and what makes them change (Christie et al. 2015). A few years after establishing TLT, Mezirow proposed that learning involves four interrelated elements, namely (1) elaborating existing frames of reference; (2) learning new frames of reference; (3) transforming points of view; and (4) transforming habits of mind (Mezirow 2000).

The ideological stance of Mezirow (1997) is that the main objective for engaging in adult learning is to develop into an autonomous, responsible thinker with a key focus on practical, short-term goals. This objective and focus align with Knowles' (1980) principles of adult learning and Peter Howie and Richard Bagnall's (2013) ideas that critical reflection through dialogue is vital in helping people adapt their beliefs to fit newer experiences. Mezirow's TLT focuses on how adult learners handle new material and thus on the dominant learning styles they adopt as they engage in learning. He posited that adults utilise what he refers to as *frames of reference* to comprehend new information and experiences. This is echoed by Howie and Bagnall's (2013) critical reflection through dialogue. The frames of reference established by Mezirow (1997) help students admit, adapt, or dismiss ideas they come into contact with. He further established that each frame of reference joins

> intellectual, conative, and passionate segments, and is made out of two measurements: propensities for the mind and a perspective (Mezirow 1997, p. 5).

Like other theories, TLT has attracted some criticisms. Paramount among these are the arguments that it fails to address social collectivism (Collard and Law 1989), that it does not account for context (Baumgartner 2012), and that it emphasises cognition at the expense of other ways of knowing (Taylor 1997). On the issue of cognition, Sharan Merriam (2004) has noted that people without higher cognitive functioning would be left out. To top off the criticisms of TLT, Howie and Bagnal (2013) posited that the theory is conceptually problematic and has remained substantively unchanged despite the arguments that have been raised against it.

In spite of these criticisms, the relevance of TLT is supported by many researchers in the field of adult education, among them Edward Taylor (2007). Patricia Cranton and Edward Taylor (2012) went as far as to dub TLT the "new andragogy" and indicated that it had become the central adult learning theory. Hence, it is a valuable theory with which to understand the dominant learning styles of adults.

Literature review: adult learning styles

Different theorists (e.g. Honey and Mumford 1986; Kolb 1984; Merriam and Bierema 2013) have ascribed different names to various learning styles. This practice has contributed to the difficulty of and, at the same time interest in,

[2] Within Mezirow's theoretical framework, a "disorienting dilemma" is the first of a number of phases learners go through on their trajectory of transformative learning. It prompts them to question knowledge they already had in the face of new information they encounter.

researching this topic (Coffield et al. 2004). In the study, I attempted to identify and explain the dominant adult learning styles of diploma students at a higher education institution in Ghana and to offer explanations for them based on the analysis of the data collected and the extant literature.

The work of David Kolb, particularly his concept of what he termed *the experiential learning cycle,* has contributed significantly to the conceptualisation of adult learning styles. Kolb believed the experience of the adult learner to be an indispensable variable in learning and thus defined learning as "the process whereby knowledge is created through the transformation of experience" (Kolb 1984, p. 38). Kolb maintained that adults learn through experience and go through four related stages, which he termed *concrete experience* (CE), *reflective observation* (RO), *abstract conceptualisation* (AC), and *active experimentation* (AE) (ibid.).

In simple terms, CE represents the stage of engaging in and reflecting on an experience, while RO refers to those learners who take longer to think issues through before acting. Such learners also tend to perceive issues from different perspectives and follow instructions meticulously (Richmond and Cummings 2005). AC occurs when learners conceptualise and create generalisations to integrate their observations into sound theories. At the AE stage, learners test the way they learn against the theories and generalisations created at the AC stage (Cox 2008; Kolb 1984). Thus, Kolb, according to his four stages, described adult learners as *diverging, assimilating, converging* and *accommodating* respectively (Merriam and Bierema 2013). Though Kolb's work has been influential with regard to adult learning styles, it, too, has been challenged. Peter Jarvis (1987), for instance, argued that it is overly simplistic and that [adult] learners are not bound to follow the processes in his model automatically, with some even skipping aspects of his four processes.

Adding his voice to the discourse on adult learning styles, Anthony Gregorc (1985) adapted Kolb's learning styles to what he termed a *four-channel learning styles model.* The four learning styles proposed by Gregorc are *sequential learning, abstract sequential, abstract random,* and *concrete random*. Frank Coffield et al. (2004) posited that Gregorc's use of perception in explaining his learning styles as concrete, abstract and sequential bears a sharp resemblance to Kolb's accommodating and assimilating learning styles. They also established that Gregorc's use of sequential processing and random processing are akin to the convergent and divergent learning styles established earlier by Kolb.

Another typology of adult learning styles was developed by Honey and Mumford in 1986. They classified learning styles as *activist, reflector, theorist* and *pragmatist.* Activists, they maintained, are learners who operate in the here and now, enjoy the challenge of new experiences but become bored with implementation and consolidation. Such learners prefer practical experience. Mobbs (n.d.) refers to this as "getting their hands dirty". Kolb et al. (2001) referred to this category of learners as "divergers". They learn best through brainstorming, problem-solving and other activity-based forms of learning.

The second type of learners – reflectors – observe and evaluate situations from a range of different perspectives before reaching a definitive conclusion.

They are cautious and evaluate various viewpoints before acting (Mobbs n.d.). Such learners prefer that content is introduced to them at a slower pace. Honey and Mumford's reflectors are equated by some to Kolb's assimilating learning style (Merriam and Bierema 2013) and they learn best through paired discussions, observation activities, and interviews.

Theorists seek to understand the theories behind actions and integrate observations into complex but logically sound theories (Honey and Mumford 1986). Like Kolb's (1984) "converging learners", they think problems through in a systematic manner and assimilate disparate facts into coherent theories. Such learners enjoy being presented with information in a logical and coherent manner. Mobbs (n.d.) notes that theorists' preferred learning activities include models, statistics, stories and the theoretical application of concepts.

Lastly, pragmatists enjoy new ideas and theories, and testing how these can be applied in practice. They like to act quickly and adopt a practical, problem-solving approach. Pragmatists exemplify Knowles' (1980) principle of the immediacy of use of new knowledge or skills. They are also described by Mobbs (n.d.) as learners who spend time on conceptual ideas or theories only if they can apply these to their lives. Such learners exhibit characteristics similar to "accommodators" in Kolb's (1984) categorisation.

Various empirical studies of adult learning styles have identified the activist as the least common style. In a study by Javier Lesmes-Anel et al. (2001) reflector-theorist came out strongest. Paul Stimpson and Stefan Plusa (2004) saw a progression from activists to reflectors and then to pragmatists as the surgical trainees and consultants in their study rose in seniority. Mean scores from students and tutors in a study by Honey and Mumford (2000) showed the preferred learning styles of the respondents to be reflector, pragmatist, theorist and activist respectively. Lastly, a study of nurses by Abdul Hadi Ishak and Azlina Uyub (2017) also identified reflector and theorist as the most common learning styles. This may largely be due to the nature of the nursing profession and the ethics that guide it. Even in emergencies, nurses are expected to analyse situations carefully before taking action.

From the above, it can be noted that a considerable amount of research has been conducted globally on adult learning styles, including criticisms by researchers such as H Higgins and Hall (2004), Hall and Moseley (2006), Hattie (1999) and Vorhaus (2002). However, little research has been conducted in the geographic and sociocultural context of West Africa. To fill that gap, this study seeks to determine the dominant learning styles among diploma students in a higher education institution in Ghana.

Methods

Research approach and design

I conducted this study using a qualitative research approach, which allowed me to identify how participants discover, interpret, understand, experience and constitute

their learning styles (Bogdan and Biklen 2003). This approach also enabled me to use *how* and *what* questions to gain an in-depth understanding of participants' dominant learning styles. Consonant with the research approach and its philosophical underpinning, I opted for a case study design, involving in-depth interviews and discourse analysis (Blatter and Blume 2008).

This study design also allowed me to engage learners in a natural setting. The case under analysis was how people engage in learning and I felt this could best be identified through the use of a valid instrument (i.e. the questionnaire) and the observation of learners. The selection criteria to participate in this research were (1) to be a Diploma Two[3] student at the time of the research; (2) fully completing the Learning Style Questionnaire (LSQ) developed by Honey and Mumford (1986) in such a manner that participants fell into one of the learning styles; and (3) agreeing to take part in focus group interviews.

Sampling

A two-step approach to sampling was adopted in this study. In the first step, participants were asked to complete the Honey and Mumford (1986) LSQ in order to gauge their dominant learning styles. The LSQ has 80 questions, and while respondents were encouraged to thoroughly read all of them, they were requested to answer only those that related to their own way of learning. The results from the survey were helpful in answering the first research question, which served as an inclusion criterion for participation in the focus group interviews. The second step helped in answering research question two.

The analysis of the Honey and Mumford LSQ survey results led to a division of participants into three learning style categories, namely *reflectors, theorists* and *pragmatists*. None of the participants were identified as activist learners. This sampling technique led to the formation of homogeneous groups whose members shared similar characteristics, in turn paving the way for the use of focus group interviews to gather core data for this study. I conducted a total of three focus group interviews, with each group comprising seven participants. A total of 21 participants were involved in this study. The reflector group comprised three males and four females. There were five males and two females in the theorist group, and three males and four females in the pragmatist group. In all, 11 males and 10 females took part in the study. Their ages ranged from 27 to 54 years.

Ethical considerations

Before the participants completed the LSQ, I stressed that participation in any stage of the research was entirely voluntary and that participants could decide not to proceed with the focus group interviews even after completing the LSQ. I addressed

[3] Diploma Two refers to the second year of a two-year higher education programme in Ghana. Students graduate with a diploma certificate upon successful completion of their curse work and project work.

the objectives of the research, as well as the fact that the data being collected would be used for research purposes only. Most of the participants were participating in research for the first time, so they were constantly reminded not to identify themselves in any way while filling in the questionnaire. Participants' real names were not used in the final report.[4] Before the focus group interviews, the issues of confidentiality, voluntary participation and freedom to leave the process at any point in time were restated. I encouraged participants to candidly share as much information as they could, but where emotions set in or they preferred to stop, their wishes were fully respected.

Data generation

During the fourth week of the *sandwich* period (June to July 2017)[5] when the second year diploma students had fully settled into the programme (UG 2016), I distributed the Honey and Mumford LSQ to the whole class (67 students) in the morning and collected the completed questionnaires (n=21) the following day after their last lecture.[6] Before the participants completed the questionnaires, I took time to explain the essence of the questionnaire and answered questions from the class. The participants were informed of the impending focus group interviews, which were to be conducted two weeks later based on the responses obtained from the LSQ survey. This was consistent with the assertion that learning style instruments such as the Honey and Mumford LSQ enable students to assess their strengths and weaknesses and also categorise them into various learning styles (Coffield et al. 2004).

Before the sixth week of the sandwich period, I analysed the completed questionnaires to ascertain which dominant learning styles each participant belonged to. Afterwards, I consulted two expert researchers to deliberate and agree on the categories that emerged from the data. The experts helped in deciding on the number of focus group interviews to conduct and also in formulating the questions to elicit responses during the focus group interviews. During the sixth week, I conducted two focus group interviews, and the last one was conducted in the seventh week.

Guided by Honey and Mumford's (1986) LSQ to situate participants in their dominant learning styles, I used a semi-structured interview guide during the focus group interviews. The key interview questions I asked were:

[4] I refer to them simply as Participant A, Participant B etc.

[5] This period was "sandwiched" between the first week of June and the last week of July, when regular students were away and classrooms are available for other purposes – hence the name. Until the 2017/2018 academic year, all diploma students had to be engaged on a sandwich basis, but this has meanwhile been changed to distance learning mode. Since many diploma students are employed in regular jobs, this means they no longer have to take two months of study leave in the summer, and can instead study in the evenings and at weekends throughout the year.

[6] Since filling in the questionnaire was voluntary, I did not probe why only a third of the class completed the form. One of the reasons might have been that it was a first-time exposure to research for most of them, and they might have been worried that their data could be used for other purposes. Another reason might have been that some students were also afraid of their presence at school being exposed, since their bosses were not aware of their having enrolled for the course.

(1) How do you react when you hear or come across new ideas?
(2) When do you normally put new ideas into practice? How do you do that?
(3) What is your approach to new situations or challenges?
(4) What role(s) do you prefer to play in group discussions?
(5) How do you react to people who are not organised in their activities or work?

Data analysis

To analyse the data collected for this study, I used NVIVO 11 Software[7] and the five steps of qualitative data analysis conceptualised by Ellen Taylor-Powell and Marcus Renner (2003). The first step is *getting to know the data*. Together with the two experts consulted, I read all the transcripts while listening to the audio recordings of the focus group interviews at least three times to ensure that the transcribed data were accurate. Finally, I documented all the impressions I had as I perused the data.

In the second step, termed *focus the analysis* (ibid.), I reviewed the objectives of this study and carved out the key questions the analysis should answer. I documented these research questions to enable me to choose how to begin. I entered the three focus group interviews into the software, which then organised and analysed the data by auto-coding themes and sentiments. I used the software to run query, word frequency and text searches. This helped me to identify the recurring codes, which then aided me in building themes.

The third step, *categorising the data*, had already been accomplished with the help of the NVIVO software, so I manually identified themes or ideas, concepts, behaviours, incidents and phrases. I organised them into coherent categories, which summarised and brought meaning to the descriptive characteristics of each learning style. The fourth step was the *identification of patterns and connections* with and between categories. I also evaluated the relative importance of different themes and emphasised subtle variations essential to my analysis. During the fifth step, *interpretation*, I brought all similar themes and patterns together and interpreted the connections within and between categories. The categories I generated included the following:

- curiosity;
- low tolerance for uncertainty and disorder;
- slow to make up one's mind;
- thinking problems through step-by-step;
- investigation before conclusion;
- interest in new ideas;
- systematic and analytic approach to problem-solving;
- no interest in theories; and
- observation before participation.

[7] NVIVO 11 is a software package which helps researchers to organise and analyse non-numerical or unstructured data.

I used the themes and connections to explain my findings – thus, "*curious and problem-solving-oriented learners"* for pragmatists, *"critically cautious observers"* for reflectors, and *"logical and analytical learners"* for theorists – and as starting points for a list of the essential findings. I discussed the findings that emerged from the analysed data with the help of Mezirow's transformative learning theory and extant literature.

In order to validate the findings and enhance the reliability of this study, and to ensure an accurate interpretation of the data, I harnessed the cooperation of the study participants and *member checking*.[8] Confidentiality was also ensured by not using the personal names of any of the participants in this study. In sum, I executed the conventional method of data analysis by reading through the transcripts thoroughly and extracting codes which I later merged into themes and compared to those produced by the NVIVO 11 data analysis software.

Research findings

After grouping the participants according to their preferred learning styles, as established by the Honey and Mumford (1986) LSQ, and engaging them in the focus group interviews, I generated the following findings.

Pragmatists: curious and problem-solving learners

As mentioned above, the first question I asked participants was what they did when they heard of a new idea or approach. From their answers it became apparent that curiosity and interest come into play once pragmatist learners encounter new ideas. For instance, Participant E stated,

> "I get curious because I am eager to know what it is about or what it entails."

Participant D also indicated

> "I would be very curious, so I would just go to the people who know better than me to get more insight into the new idea or approach."

Both participants identified curiosity as their key trait. Participant A had a similar trait, but added the dimension of being cautious in this statement,

> "As for me, I am very curious, but with caution. When I hear something, I want to know why they are bringing it, but I take some time to think about it."

The important thing to note here is that pragmatists are not interested in theories, since these make the learning process difficult or boring for them. Mobbs (n.d.)

[8] In a research context, the term "member checking" refers to the process of making the participants of the study validate the data collected from them. The transcribed data are presented to the participants for review so they can ascertain whether or not the contents reflect what they shared during the focus group interviews.

explains that pragmatist learners are action-oriented and have no time for theories. They are mainly curious, as reflected in Mezirow's (2000) idea of creating new frames of reference when confronted with a new situation. At the same time, they are cautious, because some adult learners, especially those in this cohort, need time to transform their points of view (ibid.).

When participants were further probed to ascertain how they put new ideas or approaches into practice, they responded in the affirmative. Participant C stated:

> "For me, I normally practise mine if I understand it well. If I really understand it, then I would put it into practice immediately."

Similarly, Participant B indicated that as soon as an idea is proposed, she puts it into practice, and if materials need to be organised first, she gets them ready and then acts immediately. These responses support Adrian Furnham's (1996) assertion that pragmatists are practical and realistic. Their pragmatic or practical nature most likely makes them more curious than the other types of learners, and thus the immediate use of ideas and approaches helps them to understand what they do.

Honey and Mumford (1986) established the premise that pragmatists adopt a problem-solving approach to situations, and the results from this study confirm this. When I asked participants to explain why their approach to new situations was realistic or theoretical, the chorus was practice over theory. Participant A gave the following explanation:

> "This is because practising whatever you put your hands on stays with you, but when you do the theory, it will go off. For instance, if you go to Computer College and learn ICT and just read about how to use the software without using a computer often, you will forget about it."

The pragmatists are so practical and oriented towards problem-solving that, even when the content with which they are engaged is purely theoretical, they still find ways of making it practical. Insight into this finding was provided by Participant D:

> "When I am learning [reading], because I am not the theoretical type, it is sometimes very difficult. Sometimes I have to create a story in my mind to aid me to understand whatever I am learning. What I learn, I practise in my head, so it helps me to understand better."

These participants' reflections resonate with Furnham's (1996) characteristics of pragmatists as being most likely to reject anything without an obvious application; they were least interested in theories or basic principles and their focus was on problem-solving as they were task-oriented. This aligns with Mezirow's (1994) assertion that learners are constructive, so they go through a process of disorienting dilemmas, meaning they interpret and reinterpret their experiences to arrive at conclusions or make decisions. I observed in this study that the pragmatist learners were more eager to talk as they engaged in the focus group interviews than learners in the other groups. They wanted to be part of the processes that led to the solutions or outcomes.

Reflectors: critically cautious observers

In the literature, reflectors, who are known as "assimilators" in Kolb's (1984) categories, are learners who observe and critically evaluate situations before reaching a conclusion (Merriam and Bierema 2013). In a bid to situate these participants in their learning style, I encouraged them to discuss their preferred role in group discussions. Almost spontaneously, they indicated a preference for listening over talking. Participant F, for instance, reflected that

> "I listen first before talking."

Participant C added,

> "Listening, I would like to have everyone's views before bringing mine."

The assertion that reflective learners are cautious and observe before acting (Mobbs n.d.) is evident from these responses. The fact that they listen more is indicative of their caution and propensity to investigate before getting involved in activities. Such learners may be considered cautiously optimistic, an attribute that dovetails with Mezirow's (1994) disorienting dilemmas.

Based on that premise, I asked the participants about their approach to new situations. Once again, their answers indicated a homogeneity among this group of learners; they took time to investigate issues before arriving at a conclusion. In a typical instance, Participant D indicated,

> "I don't react immediately, I think about the issue and its effects before the next step is taken."

A further investigation of how participants arrive at decisions resulted in similar responses, reinforcing what has been established about reflectors – that they are cautious and do not rush into making decisions, because they make their decisions based on perceived benefits. Participant B stated

> "I like to think about things carefully … I pick the important ones on my list first."

Participant E added,

> "I prioritise and look at the best one among the options available."

The above statements display the idiosyncratic features of the reflector learning style, namely that they like to think about things in detail, observe and evaluate from a range of perspectives before acting (Honey and Mumford 2000, cited in Fleming et al. 2011). The observed characteristics of the reflectors support Sharan Merriam and Laura Bierema's (2013) comparison with Kolb's category of assimilators.

Furnham (1996) established that one weakness of reflectors is their tendency to hold back from direct participation because they are slow to reach decisions, cautious, unassertive, and risk-averse. This pattern was reflected in some of the participants' responses. In a typical instance, Participant A disclosed,

> "I had to take a big decision in my life concerning my relationship … I decided to let him [referring to her ex-boyfriend] go because for like six years I had not seen anything good."

Similarly, when Participant B was deciding on his career choice and path in higher education, he revealed,

> "I decided to stay home for a year and think things through and found out about this programme [Diploma in Adult Education] and I'm really enjoying it."

The sub-theme generated for respondents at this point is *slow to make up one's mind*, in terms of their responses and what Furnham (1996) identified as the weakness of learners in the reflective learning style category. Though the final decision might have been reached late, it brings to light an element Mezirow (1994) called "transforming habits of learning".

Theorists: logical and analytical learners

Participants in the theorist learning style group were given the same questions as their colleagues who are aligned to the other learning styles. This was to test whether or not they fit into their self-selected learning style. Generally, the participants in this group displayed traits of theorist learners as established in extant literature. They commented that problems must be solved by listening to both sides, avoiding jumping to conclusions, seeking advice, and being open to change. Participant D indicated,

> "I have to look critically at the issue before I go ahead to solve it … you need to listen to the person … before you can advise … Not to conclude if the person is right or wrong."

Also, Participant C recommended,

> "if there is a problem, you do not have to jump to a conclusion at once."

These statements were congruent with the characteristics of *theorist* and are in line with Kolb's (1984) proposition that theorists think problems through in a systematic manner before formulating ideas. When I asked participants about their approach to new situations, they indicated that they followed step-by-step and systematic processes to arrive at the best decisions. In this regard, Participant G affirmed,

> "logical and analytical people … take their time and go by the systematic way, so you won't have any problem."

Similarly, Participant A believed that

> "being systematic is the best, because it's step-by-step and it lets you know whether you are on the right path or not."

Data generated from the participants situated them within the theorist learning style because, as stated by Honey and Mumford (1996), such learners think through

problems in a vertical, step-by-step and logical manner. Such systematic approaches to solving issues will likely turn them into autonomous learners over time and make them responsible thinkers as well (Mezirow 1996).

A weakness of theorist learners, according to Honey and Mumford (1996), is their low tolerance for uncertainty, disorder and ambiguity. When participants were requested to share how they feel or react when they see that things have not been done in an orderly manner, they showed a low tolerance for uncertainty, disorder and ambiguity by stating they would be angry, lose trust, and feel disappointed. Participant C reflected,

> "At a workplace, I can dismiss you and take someone who is serious about the work."

To the theorist learner, not doing things right can warrant the highest form of disaffection. Participant D also demonstrated some level of intolerance by stating,

> "for me, I become angry. There are certain things I can't tolerate."

In a similar fashion, Participant A stated,

> "for me, I would never trust the person again and put any work in his or her hands."

Kolb's (1984) argument that those with a theorist learning style think problems through in a logical manner was confirmed by the responses I received from this group. The energy theorist learners invest in their step-by-step approach, and their systematic way of doing things, are likely to be the main reasons why they show low tolerance for those who do not operate the same way they do. Their traits fit the description ascribed to them by Mobbs (n.d.), as people who enjoy theories, concepts, statistics and stories.

Discussion of findings

According to Li-Fang Zhang and Robert Sternberg (2006), where students do not perform well in their chosen programmes/subjects, it is usually not because they are not good students, but because their learning styles are inconsistent with the underlying principles of their chosen subjects. This highlights the need to understand the learning styles of adult learners in order to facilitate their learning and boost their performance. In this study, the dominant learning styles of Diploma Two adult education students were uncovered and the students were categorised into pragmatist, reflector and theorist learning styles.

The pragmatists tended to be interested in new ideas and put these ideas into practice as described by Mobbs (n.d.). These learners preferred practical learning over theory and rejected anything without an obvious application (Kolb 1984). What this study identified in the responses of the pragmatist learners is that they are less interested in theories because they are practice-oriented. This finding is supported by the literature; for example, Mezirow (1997) established that adult learners wish

to be autonomous and responsible thinkers in order to be more practice-oriented. The findings of this study corroborate evidence from the literature on pragmatist learners, indicating that there is some homogeneity among adult learners who fall into this category, irrespective of their context.

A key finding about reflectors concerns their inclination to take time to investigate issues before arriving at a conclusion, a habit already established by Thomas Cox (2008). Because this cohort of learners may be cautious about making mistakes, they tend to observe before participating and follow instructions conscientiously (Richmond and Cummings 2005). It is evident that reflective learners have the ability to delve into issues in depth, having first taken time to investigate them. This is in keeping with Mezirow's (1996) assertion that learning is best understood as a process of using prior knowledge to give meaning to one's experience in order to guide future action. By observing and following instructions, reflectors are careful to use their own personal experiences and those of others to get things right and to perfect their way into the future. At this point, Mezirow's (1997) disorienting dilemmas and transforming habits of learning converge as the learners dig into their own experiences to cautiously find solutions for new situations. Due to the time spent making up their minds, these learners may sometimes be regarded as slow or weak. However, this perceived weakness is a misapprehension, as they simply need time to consider issues and minimise the risk of making mistakes. Like pragmatist learners, reflective learners are described in the extant literature, and their features are also corroborated by Mezirow's studies.

In the findings, I identified the strength of the theorists; namely their ability to think issues or problems through in a vertical, step-by-step, logical manner and assimilate disparate facts into coherent theories (Furnham 1996). This group of learners thinks issues through in all dimensions, bringing to bear what Howie and Bagnall (2013) term "critical reflection". Unlike reflectors, who take time in decision-making partly due to being overly cautious, theorists, as described by Kolb (1984), take time to think things over because of their capacity to assimilate disparate facts into theories. In other words, the theorist learner prefers to analyse and synthesise ideas through the use of a systematic and analytical approach to problem-solving. Such attributes help learners become autonomous thinkers (Mezirow 1994) thanks to the strenuous logical processes they go through to arrive at decisions.

The findings of this study also uncovered a weakness of the theorists; namely their low tolerance for uncertainty, disorder and ambiguity. I identified this through some participants' statements that they would dismiss employees who were not systematic and logical, and others indicating they would never trust such people again. In explaining his TLT, Mezirow (1994) indicated that the way learners interpret and reinterpret their experience is central to the meaning they make. In this regard, since the theorist learners' understanding of how things should be done is logical, systematic and step-by-step, any other way of doing things is unacceptable to them, hence their inability to accept uncertainty and disorder. This sets the theorist learners apart from those exhibiting other learning styles. In this study, learners in the groups of pragmatist or reflector learning styles seemed indifferent to people who are not organised in their work.

One finding from this study that needs to be interrogated further is that none of the respondents practised an activist learning style. This is not entirely surprising, since evidence abounds that the activist learning style is the least common among adult learners (Astin et al. 2006; Honey and Mumford 2000; Ishak and Uyub 2017; Lesmes-Anel et al. 2001; Stimpson and Plusa 2004). Its rarity suggests that mature adult learners may not like to be in the limelight, a key attribute of activists. Also, like the nursing students in Ishak and Uyub's (2017) study, these diploma students may have adopted more submissive roles, not by virtue of their personalities, but by the nature of their jobs (as mentioned earlier, up to nine of them were lower-level employees and five were petty traders) – they were used to analysing situations and follow instructions and processes somewhat strictly. Hence their preference for one of the other three learning styles.

Lastly, I observed that, though contexts and adult learners vary in many ways, there is little variation in the categorisation of adults based on their learning styles. It follows that an understanding of adult learning styles may help teachers and institutions to improve their performance. Beyond this, knowledge of the learning styles is useful in designing or selecting content and instructional designs most suitable for adult learners, as this will maximise their learning.

Conclusion

The findings of this study have revealed the dominant learning styles adult learners who join university as mature students adopt and how specific contexts influence these. These two elements are instrumental in creating an enabling environment for adult learners in higher education. The findings show that adult learners in Ghana somehow differ from those elsewhere, in terms of context and milieu, their preferred learning styles remain the same.

The study also clearly shows that there is no permanent learning style for anyone. Rather, context determines a person's learning style, and both context and learning style are subject to change. Lessons can be drawn from earlier studies that few adult learners in different subject areas and contexts subscribe to the activist learning style. One important lesson that can be drawn from this study is that both Honey and Mumford's LSQ and Mezirow's TLT support adult learning, and both were useful in situating the participants of this study in their dominant learning styles. Both also helped in understanding how the characteristics of adult learners position them in their dominant learning styles. This study thus not only adds to the literature, but also opens up an avenue for further research on how adult learning styles can be used to enhance adult learning.

While the findings of this study did establish *some* homogeneity between adult learners who operate in the same learning style across contexts, this is premised on the fact that the characteristics portrayed by the participants in the study's context do not vary much from what has been established in other studies, as well as in the theoretical literature. In this study, homogeneity was only established between learners sharing the same learning style and not across learning styles. It, therefore, reinforces the assertion that the learning styles of adults should take centre stage when

rolling out content for them, since this will eventually inform a successful instructional design which is appropriate for adult learners.

Lastly, it behoves policymakers to create different trajectories for learning at higher education institutions, since it is clear that not all adult learners engage well with the typical theoretical and conceptual content that is taught in higher education institutions in Ghana. As much as the theorist may enjoy the currently dominant mode of teaching and learning in higher education, it is likely that pragmatist and reflector learners will struggle to learn in this environment. This understanding should inform policy in order to make learning in higher education equally enjoyable for adults of all four learning styles. This could best be achieved when their characteristics are taken into consideration and a conducive learning environment is created to accommodate all styles of adult learners.

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