Instructors’ Perceptions of Authentic Assessment to Competences Acquisition among Undergraduate Prospective Science Teachers in Tanzania

Baraka Nyinge

Department of Educational Psychology and Curriculum Studies, University of Dodoma (UDOM), Tanzania

Abstract:

Authentic assessment is perceived differently by instructors about competence acquisition. Sometimes instructors perceive authentic assessment positively but when it comes to the implementation process they do not do it accordingly implying negative perception. The study involved six (6) instructors from two higher education institutions in Tanzania. The two institutions included; the College of Natural and Mathematics Sciences at the University of Dodoma and Mkwawa University College of Education, a constituent College of the University of Dar es Salaam. Data were collected by using semi-structured interviews and analysed thematically. The findings showed that instructors differed in perceptions in terms of the authentic assessment tools used. Instructors in education courses insisted on the use of portfolios, seminar presentation and microteaching as authentic assessment tools. Those in science subjects namely biology and chemistry insisted on the use of practical work and projects as authentic assessment tools. The use of authentic assessment tools was perceived to be both formative and summative though summative use appeared to be dominant. The competences which were perceived by instructors to be acquired from authentic assessment tools included content, pedagogical, and generic competences. The study is concluded by calling for clear policies on authentic assessment for all instructors to have a common perception on their uses concerning competences acquisition.

Keywords: Authentic assessment, perception, portfolios, practical work, formative assessment, summative assessment.

Introduction

There has been a concern among scholars worldwide on the perception of usefulness of authentic assessment in higher education with regard to competences acquisition among learners (Fox et al., 2017; Gunasekara & Gerts, 2017; Sokhanvar et al., 2021). This is because studies show that the use of authentic assessment is perceived to be beneficial to learners (Fox et al., 2017; Gunasekara & Gerts, 2017; Sokhanvar et al., 2021). Authentic assessment has been perceived to be beneficial to the undergraduate prospective science teachers by equipping them with competences useful in the teaching profession. The concern among scholars bases on the fact that, the usefulness of any mode of assessment depends greatly on the perception of the stakeholders namely instructors and students (Bloxham & Boyd, 2007; Gulikers et al., 2006; Kinay, 2018). The way instructors perceive the type of assessment may make them adopt the required techniques in using it. In addition, the perception of students is of concern as it might determine...
the pace and timing used in doing the tasks (Bloxham & Boyd, 2007). This is because the activities or tasks to be given to the learners may be determined by the perception of both instructors and students as to whether such tasks may accomplish the intended competences.

Authentic assessment may appear meaningful to the instructors and the learners if is perceived positively (Aliningsih & Sofwan, 2015; Imansyah et al., 2018; Muin et al., 2021), however, if is perceived negatively it might not bring the intended achievement (Ghosh et al., 2021). This may be due to the fact that the way authentic assessment is perceived tends to facilitate teaching and learning processes which may lead to improvement of learning experience (Sokhanvar et al., 2021) hence competence acquisition among them. Furthermore, the ways of implementation may be determined by the perception of such authentic assessment by the stakeholders. Similarly, the approach of implementation of authentic assessment may highly depend on whether is perceived positively or negatively. Since competence acquisition depends on the efforts and amount of time spend in doing the tasks (Bloxham & Boyd, 2007); positive perception on the use of authentic assessment by instructors may influence students to actively engage in doing the given tasks.

Authentic assessment may be considered to be useful to students if it reflects really life experiences (Gulikers et al., 2004, 2006). However, to tell whether authentic assessment reflects really life experience depends on how they perceive it. It is obvious that students might spend time in tasks they consider relevant to the teaching profession beyond schooling. This means it is perception of individual learners which determine the effort and time to be spend in the learning process which in turn might lead to competences acquisition (Juanda, 2022). The point of concern is the belief of the instructors to the use of authentic assessment which may involve the students in engagement with the tasks hence competences acquisition. This implies that if instructors may not perceive the authentic assessment positively they may not implement it accordingly hence less likely to influence the undergraduate prospective science teachers to actively engage with it.

That being the case, perception on the use of authentic assessment by instructors to the undergraduate prospective science teachers competences acquisition is of concern as may determine the effort and time spend in accomplishing the tasks by each party. It is important to come up with the vivid data showing how they perceive the use of authentic assessment with regard to competences acquisition. Similarly, perception of authentic assessment with regard to competences acquisition among the instructors may pave the way on how it contributes to the engagement of the undergraduate prospective science teachers in doing the given tasks. The focus on perception of instructors on the uses of authentic assessment is because of the differences between them and students (Ayubi et al., 2021; Diharms & Hamzah, 2021; Fletcher et al., 2012). The studies indicate that instructors and students tend to differ on how they perceive authentic assessment tasks. On one hand instructors may perceive authentic assessment tasks to support learning while students may perceive to be used for accountability (Fletcher et al., 2012). With such difference in terms of perception; it is important to focus on instructors because are the ones providing tasks to students. Studies cited so far have not shown how instructors’ perception of authentic assessment may be linked to competences acquisition among learners; hence the concern for this study.

**Methods**

This part presents the approach, design, population, and sample, instruments for data collection, validity, reliability and ethical consideration of the study.

**Research Approach and Design**

The study used qualitative research approach because it focused on the perceptions of instructors towards the use of authentic assessment. Qualitative research approach was suitable since focuses on the belief that there are
multiple realities or perspectives to be uncovered in the research (Lodico et al., 2010). Likewise, it is concerned with understanding phenomenon by looking at how things happen (Johnson & Christensen, 2014). The research design used was a case study because the concern was to study in detail (Denscombe, 2010) how instructors perceive authentic assessment. By using case study research design; it was possible to get detailed views of instructors on the use of authentic assessment with regard to competences acquisition among undergraduate prospective science teachers. This is because the goal of a case study is to come up with detailed, clearly description and understanding of the phenomenon or case through in-depth interviewing (Ary et al., 2010; Cohen et al., 2007; Denscombe, 2010; Johnson & Christensen, 2014).

Participants
The study involved instructors teaching the undergraduate prospective science teachers from two higher education institutions namely Mkwawa University College of Education (MUCE) and College of Natural and Mathematics Sciences (CNMS) of University of Dodoma. Six (6) instructors were purposively sampled for the study. Three (3) Instructors from each institution were purposively selected depending on the areas of specialization namely biology, chemistry and education. Purposive sampling is used when the goal is to select cases that are likely to be information rich with respect to the purpose of the study (Gall et al., 2003). The study therefore purposely selected instructors in each area of specialization who were considered to be rich in information in their areas of specialization. With regard to purposive sampling, the sample might be a single case for the sake of developing deeper understanding of phenomenon (Gall et al., 2003).

Data Collection
The instrument used to collect data was semi-structured interview. It was used because the concern of a researcher was to seek instructors’ views, opinions, and experiences on the authentic assessment. Interview is useful in collecting data which are based on people’s opinions (Denscombe, 2010).

Results
The findings are presented according to the perception of instructors on different themes which include authentic assessment tools and uses of authentic assessment tools. In addition other themes were graduates competences acquired, grades assignments in learners work and uses of rubric as indicated in the Table 1.

<table>
<thead>
<tr>
<th>Theme</th>
<th>Description of the theme</th>
</tr>
</thead>
<tbody>
<tr>
<td>Authentic assessment tools</td>
<td>Authentic assessment tools are those by which learners are engaged with. Basing on respondents views these include seminar presentation, portfolios, projects, practical work, and teaching practice or fieldwork</td>
</tr>
<tr>
<td>Uses of authentic assessment tools</td>
<td>The use focuses on two aspects namely summative and formative. Summative use for grading while formative use for improving teaching/learning activities</td>
</tr>
<tr>
<td>Graduates competences acquired</td>
<td>The focus is on competences acquired as a result of the use of authentic assessment tools namely content, pedagogical and generic ones</td>
</tr>
<tr>
<td>Grades assignments in learners work</td>
<td>The concern is on whether the authentic assessment tools involve assigning grades or not with regard to students given tasks</td>
</tr>
<tr>
<td>Uses of rubric</td>
<td>The use of rubric in assessing the tasks given to students. The point of concern is whether rubrics tend to be used by instructors and how do they perceive such use</td>
</tr>
</tbody>
</table>

Perception of instructors towards the use of authentic assessment focused on various themes as presented in Table 1.

Authentic Assessment Tools Used at the University
Instructors had different views on the authentic assessment tools used at the university ranking from seminar presentation, projects, portfolios,
practical work and teaching practice. They regarded each tool to bring different competences; however, they differed in terms of the uses of authentic assessment tools. For example, one of the respondents had this to say with regard to the authentic assessment used at university;

*I normally use seminar presentation we do give students questions and in group of 5 to 10 they go and read and come and do presentation weekly and after being commended by instructors they submit their work. We also do projects, even portfolios we do offer (Respondent 1, November 2021)*

This respondent mentioned the authentic assessment tools used as seen in the quote to be portfolios, seminar presentation, and projects. However, did not mention the use of practical work in the course taught by her. The second respondent also mentioned the authentic assessment tools commonly used such as practical work, projects and fieldwork. The portfolio was identified not to be used at all. Here are the comments made by the second respondent;

*We are using practical work, for example when teaching entomology they go to the field and collect insects. I'm using practical session as final product but on the way are involved in doing tasks. In terms of projects; the way they are writing might be similar to project. Portfolios are not used at all. (Respondent 2, November 2021)*

The respondents insist on the use of practical way and projects as tools of authentic assessment commonly used, portfolios according to her are not used at all in almost all biology courses. The findings on authentic assessment tools from all four respondents cited the authentic assessment tools used as in the Table 1.

Portfolios were found to be used in pedagogical courses and instructors had positive perception to the contribution of this tool to competences while practical work was found to be used in biology and chemistry courses. Projects were found to be used by instructors in all courses namely education, chemistry and biology indicating that instructors had positive perception on the use of projects in acquisition of competences among the undergraduate prospective science teachers. For example, portfolio was used in some pedagogical courses and had made the undergraduate prospective science teachers acquire competences. This was commented by one of the respondents as follows;

*I think portfolio has something to do with organizational skills, communication, collaboration because sometimes they do as a group rather than individual. This is essential in enhancing their competences because they do get feedback; when they get constructive feedback it may help for further learning (Respondent 1, November 2021)*

The second respondent had also positive perception on the use of portfolio to competences acquisition among the undergraduate prospective science teachers that it contributes towards such role. Portfolio was observed to be used formatively by the instructors leading the undergraduate prospective science teachers to spend time on tasks. This is emphasized by one of the interviewees;

*Even portfolio we do offer where students collect various tasks such as designing scheme of work and lesson plans.*

So this point cement the claim made by the respondent that portfolios are used more in pedagogical courses dealing with teaching methods. Respondents two and three did not mention the use of portfolios in Biology and Chemistry respectively. Portfolios in these courses were not used at all.

Seminar presentation as one of the authentic assessment tools was also observed to be perceived positively by instructors to make the undergraduate prospective science teachers to acquire competences. The way seminar presentations are used may lead to various competences as presented by the one of the respondent;

*I think they do help for example in seminar presentation we give them questions and they need*
Projects were found to be used by instructors with positive perception to it as undergraduate prospective science teachers are fully engaged in carrying out the tasks. This point is insisted by one of the respondents:

When they do projects, they have to come up with their way of thinking; they acquire higher level of thinking. When you give them a project they decide for themselves through thinking – it is a kind of student-centered approach; at the end of it they write a report (Respondent 1, November 2021).

Practical work is perceived to be useful to competences acquisition since it is used to link theory and practice. One of the respondents had this to say with regard to practical work:

We are using practical work, for example when teaching entomology, they go to the field and collect insects. I’m using practical session as final product but on the way are involved in doing the tasks” (Respondent 2, November 2021).

The authentic assessment commonly used at the university mentioned by the four respondents were almost the same; as the fourth respondents mentioned those already mentioned by the other respondents, however he added teaching practice as a form of fieldwork and documents review. Here below is his response:

We do assessment like normal tests, exams, we do project work, documentary review, we ask them to review papers and come up with summary of the manuscript. Also we have practical, and also we have fieldwork which includes teaching practice, and practical training. I think these five categories. (Respondent 3, November 2021).

Uses of Authentic Assessment Tools

The concern was to find out how authentic assessment tools mentioned by the respondents in Table 1 are used under the two aspects namely formative and summative. The question focused on how are the tools of authentic assessment used with regard to formative or summative? The findings from the respondents showed the use of tools both formatively and summatively though in some aspects summative use was dominant. Basing on this finding one of the respondents had this to say:

Most activities like seminar work, like projects, like portfolios I can consider them formative; I consider formative because are done in the process of teaching and learning, for example in the modular there are these activities or tasks like seminars, projects and have feedback for further learning. But for practical work it depends, the practical we are conducting here (at university) may be summative because when you are done with the practical is over it is like you are doing the final university examination. Once you are done it is the end of it; is considered for grading (Respondent 1, November 2021).

The respondents insist on the formative and summative use of authentic assessment tools, though agrees that summative use is given much emphasis in that 40% for coursework and 60% for the final university examination. The second respondent had similar views on the use of authentic assessment tools formatively or summatively;

I can say I’m using them both, first of all at the end I will grade, therefore in the process I use formatively, but at the end of the day I will grade. I do for the purpose of improving learning but at the end of the day there will be grades assigned. (Respondent 2, November 2021).

The respondent justifies the summative use of authentic assessment tools with the following comment;

The nature of our students is that when you go for formative alone few of them will be serious in studying. They are concerned with how much will they get. How much can I score if I do this? So if you just consider formative few of them will do the tasks (Respondent 2, November 2021).

Similarly, the third respondent had the same argument with regard to the formative and summative use of authentic assessment tools;

We use both of them; formative and summative. Teaching is a continuous process so you cannot
wait till the end for grading. If you want to find the degree how learners have done how are you going to do it without grading? (Respondent 3, November 2021).

The respondent focused on the uses of authentic assessment both formatively and summatively, with the emphasis of grading. For example, stressed the use of authentic assessment tools formatively with the emphasis of grading as follows;

So how will learners improve without grading? At the end you must assign grades even if it is 2 marks. We give them a lot of tasks with little marks; otherwise they won’t be serious if grading is not involved” (Respondent 3, November 2021)

The respondent number four on the uses of authentic assessment tools insisted that are used formatively because they are given to the undergraduate prospective science teachers for the sake of improving the process of learning. He insists in the following statement;

I can say I’m using them formatively with practical work. I can give you an example, usually my students I tell them have to design practical themselves. I give them areas then they have to plan for the practical they have to be in group of 4 or 5 they have to design practical work after they design they have to come and prepare for practical work for fellow students. So they will come here and arrange the apparatus then when the day comes they have to teach their fellow students. first of all as a discussion group they have to present on how to do experiment, how is done, then they divide members in groups, so those members of the leading group have to pass from group to group and assist other students on how to carry the experiment and collect data. Myself I’m there following if they do mistakes I correct, so I can say it is formative (Respondent 4, November 2021)

The respondents further explain the formative use of microteaching and fieldwork or teaching practice;

Even microteaching I’m doing formatively because students have to prepare lesson plans. I usually check the lesson plans before, even here I have some lesson plans (He picks some the lesson plans and shows them to the researcher) then I make correction on areas facing difficulties then if I see they have problems in areas of competences, I make correction. For the fieldwork, I mean teaching practice when we go there we assign some marks but we talk to them on mistakes they are making. (Respondent 4, November 2021).

The respondents insist on the formative uses of some tools of authentic assessment namely practical work, microteaching and teaching practice though there are grades involved which might make them be used summatively too. Respondents 5 and 6 had similar views on the use of practical for improving of learning though they stressed on grading making them to appear used dominantly in summative way.

Graduates Competences Acquired

The findings showed different competences that may be acquired through the use of authentic assessment as per the views of the respondents. The respondents involved mentioned the competences perceived to be developed by these tools namely content, pedagogical and generic or soft skills. However, they vary from one tool of authentic assessment to another. The respondents had almost the same views implying that the saturation point was reached with regard to perception of instructors on the competences acquisition among the undergraduate prospective science teachers. Since the respondents involved had almost similar views here below are examples of such views from the instructors;

I think they do help for example in seminar presentation we give them questions and they need to have a skill like team work because they need to work together to communicate messages in front of the class. Can enhance problem solving skills because are given tasks and should come up with solution- so it also enhances problem solving skills. When they do projects they have to come up with the way of thinking, they acquire higher level of thinking. I think portfolio has something to do with organizational skills, communication, and collaboration because sometime they do as a group rather than individual. (Respondent 1, November 2021).
The responses from the instructors in education based competences in portfolios, projects, and teaching practice rather practical work which appeared to be discussed by instructors in biology and chemistry courses. Apart from content knowledge that may be acquired through practical work it was reported some generic competences such as team working, communication, decision making and collaboration to be acquired by the undergraduate prospective science teachers as indicated in the response;

First of all, you arrange them in groups, you give manual, you allow them to study manual then you ask them questions on such manuals then allow them to do practical by using such manuals. So we ensure they acquire generic skill through such interaction (Respondent 3, November 2021).

From the quotations in the two responses from instructors all competences have been presented namely content, pedagogical and generic which may be acquired by the undergraduate prospective science teachers the content competences from practical work mainly while pedagogical is from portfolios and teaching practice. Generic competences may be acquired through all the tools mentioned.

Views of Instructors on the Use of Authentic Assessment Tools

The respondents involved in the study had positive views on the use of authentic assessment in higher education with regard to competences acquisition. They believed it to have contribution to the undergraduate prospective science teachers as are fully engaged in doing the tasks. However, they indicated challenges such as large classes and time as factors that tend to hinder the effective use of such authentic assessment tools. For example, in responding to question on effectiveness of practical work to learners’ competences acquisition, one respondent commented the following:

Resources are scarce, we have more than 500 students, so in carrying practical is challenging as instructor you have to work hard to accommodate that.” He kept on insisting despite the challenges, however, authentic assessment tools are very relevant to competence acquisition because if I tell them to prepare scheme of work, or lesson plan in portfolio that is what they are going to do.” (Respondent 3, November 2021).

Similarly, another respondent commented as follows;

I find authentic assessment useful compared to traditional assessment paper and pen test. But students should be committed; you know hands-on activities need commitment.” (Respondent 2, November 2021).

Discussion

Perception of instructors on authentic assessment to competences acquisition has been observed to be positive in that they believe the uses of authentic assessment tools may lead to competences acquisition among undergraduate prospective science teachers (Holisah & Umam, 2021; Huang & Jiang, 2021; Schultz et al., 2022). For example, (Mardjuki, 2018; Mudau, 2022) perceive the use of authentic assessment to lead to competence acquisition since learners become autonomous in the process of learning. Based on the findings, the authentic assessment tools which were found to be commonly used include seminars, micro-teaching, projects, practical work, portfolios and fieldwork or teaching practice. The uses of tools of authentic assessment differed based on the course under study, for example for education courses such as teaching methods portfolios, projects, micro-teaching and practical were commonly used. This might be because the courses require the undergraduate prospective science teachers to design lesson plans and teaching and learning materials. In some cases, they were required to design practical work as a lesson for teaching. The findings of this paper are in line with Juanda (2022) who found that instructors had a positive perception of the use of authentic assessment tools, however, they were inadequately using them.

Inadequate use of authentic assessment tools in particular and authentic assessment in general was due to the challenges involved in using them
The challenges mentioned to affect the uses of tools of authentic assessment include policies, resources, time and competences. They claim that authentic assessment may lead to competences; however, the challenges outlined affect such competences to be acquired. This means perception of the beneficial effects of authentic assessment among instructors might be affected by challenges. They may have a positive perception of usefulness but implementation may be affected by the challenges such as time, resources and instructor's competences.

In science subjects namely biology and chemistry; the authentic assessment tools commonly used included practical work and projects. This might be due to the nature of the courses; however, other authentic tools such as portfolios may cut across and appear useful so it might be a point of concern why instructors did not positively perceive such use. This is evidenced by the response of one of the respondents who claimed not using portfolios at all indicating a negative perception towards such authentic assessment tools. The problem of not using the mentioned authentic assessment tools among instructors might not just be a matter of perception but rather awareness or challenges involved in their use (Huang & Jiang, 2021; Kankam et al., 2014). For example, in support of this statement Kankam et al (2014) argue that instructors perceived authentic assessment to be used to enhance teaching and learning however, there are some challenges such as policies, time and resources which affect the use. Similarly, Gulikers et al (2006) insist that the perception of instructors on authentic assessment may differ from that of learners which in turn may affect the way is used in the process of learning. Since studies indicate a positive contribution of authentic assessment tools such as portfolios in terms of promoting learning among students (Tyas, 2020) emphasis on the uses of each tool is of concern.

The authentic assessment tools were perceived to be used both formatively for the improvement of learning and summatively for grading learners’ achievement. The perception of all instructors is based more on using these authentic assessments tools summatively as may be evidenced by the findings. The findings are in line with Sewagegn and Diale (2020) who found instructors to depend highly on traditional summative assessment methods. Similarly, Yüksel and Gündüz (2017) found that instructors placed at the top in formative use of assessment, though the implementation was summative based. The dependence of instructors on summative assessment may sometimes be due to a lack of awareness of the formative use of authentic assessment. For example, what was considered formative by some instructors appeared to be summative because the tasks presented were for the sake of grading (Broadbent et al., 2018) rather than learning. Contrary to the lack of awareness among instructors, Sulaiman, Kotamjani, Rahim, and Hakim (2020) argue that the use of authentic assessment appears to be inadequate not for the reasons of instructors lacking awareness but rather because of the culture of the dominant use of traditional assessment methods. It is known that formative use of assessment should not involve grading (Guskey, 2019) while summative use of assessment involves grading. In addition, on one hand, the formative use of authentic assessment tools must focus on the use for the sake of improving learners’ competence acquisition. On the other hand, summative use of authentic assessment tools may involve awarding of grades because the point of concern is to certify learners’ achievement of the outcomes. This shows from the findings that the instructors’ perception of the uses of authentic assessment is summative aspect. Only one instructor showed the use of authentic assessment tools particularly, practical work and microteaching formatively because the engagement of learners was highly observed for the sake of learning.

Competences acquired by the undergraduate prospective science teachers were identified as content, pedagogical and generic (Cohen et al., 2010). Instructors perceived the authentic assessment tools to develop competences among the undergraduate prospective science teachers; however, they differed in terms of the
tools used to develop competences. For example, two instructors specializing in education courses were concerned about the development of pedagogical competence by using portfolios and microteaching while the other two in chemistry and biology focused much on content competences. Generic competences were stated by each side to be developed by those tools though not in detail. The perception of instructors on such tools for competences acquisition might in one way or another determine how they use them in the process of teaching and learning.

**Conclusions**

The perception of instructors towards the use of authentic assessment with regard to competences acquisition among the undergraduate prospective science teachers was positive. However, the way the authentic assessment was implemented shows negative perception because was not implemented accordingly. They perceived it positively that may lead to competences acquisition among learners but in the process of implementation they less likely implemented it indicating negative perception among them. The perception of instructors to the authentic assessment with regard to competences may be due to lack of clear policies specifying the uses. Since there are no policies on authentic assessment in most higher learning institutions on the use of authentic assessment; each instructor comes with his/her perception on such use.

**Disclosure statement**

There is no conflict of interest in this paper.

**Funding**

There is no any financial support in this work. It is private funded.

**References**


