Assessment to learning: A possible addition to formative assessment

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ABSTRACT: *Assessment to Learning (AtL) emphasises social constructivism, via the collective and sharing of knowledge through guided and planned incremental learning. The goal of AtL is to capture and impact on the learner's learning journey. AtL achieves this goal above by acknowledging the power of collective learning experiences; the learning experiences that reflect the successes and failures of the learner, their peers and their teacher/s (henceforth referred to as the participants), and then, through cultivating those learning experiences into Future Actionable Knowledge (FAK). FAK represents the application of present, past and future knowledge by emphasizing the Multi-Dimensional Discourse (M-DD) communication channels, via Feedback-Feedforward Learning (FB-FFL), between the participants to diminish gaps-in-knowledge. Therefore, AtL is a formative assessment process built on the learning experiences of the participants to guide, and incrementally impact, via FAK, on their learning by facilitating a diminishment of gaps-in-knowledge.*

KEYWORDS: **Gaps-in-knowledge, feedback-feedforward learning and future actionable knowledge, formative assessment.**

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1. Introduction

The focus of this paper is to unpack *AtL*. Formative assessment, the Victorian (Australia) Government's Department of Education (VGDE) (2020) website highlighted, was any assessment used to improve teaching and learning, based on evidence, to help identify what a learner knows and can do, and to understand what each learner is ready to learn next. AtL, the authors suggest, is a type of formative assessment because of an association with teaching, learning and the learner, via a capacity to guide, and incrementally impact on the learner's learning. Therefore, AtL is a possible type of formative assessment, which the authors believe, could be used in a number of educational settings.

Whilst formative assessment is deemed by many educators (for example, Moss & Brookhart, 2019; Shepard, Penuel & Pellegrino, 2018; Wiliam, 2016; Wiliam & Leahy, 2015) as integral to the learning process there are still challenges associated with its use. In the context of Vietnam, at tertiary educational level, common teacher-related challenges have been reported to involve being a heavy workload (Can, 2019; Nguyen et al., 2021; Pham & Renshaw, 2015), a big class size (Nguyen et al., 2020; Nguyen et al., 2021; Phan & Truong, 2020) and being time-consuming (Nguyen et al., 2020; Phan & Truong, 2020). One potential way to address these challenges is the shared responsibility between both teachers and learners. To date, this issue has been explored in a growing body of research (Pham & Pham, 2021; Ho & Dang, 2019) through a process, whereby teachers give feedback on learners' work, while learners assess their own performances (Harrison, 2010; Topping 1998, 2009). However, learners' engagement in formative assessment practices, as claimed by Nguyen and Nguyen (2020), was a real challenge to the educational settings in Vietnam. Therefore, the authors hope to provide some insights into one possible approach to address these challenges above, through promoting both teachers' and

learners' participation in formative assessment practices.

To facilitate the above this paper provides the following. First, an explanation for *AtL*. Second, by building on this explanation highlight the association of *FAK, FB-FFL* and finally, *Diminishing Gaps-in-Knowledge*.

AtL focuses on the narrative that learning is based on a collective, and shared, journey comprised of a number of linked experiences, which are accentuated by successes and failures, and how those linked experiences could be cultivated to provide FAK. Through FAK, the authors argue, the learner, their peers and teacher/s are positioned not to view formative assessment as the totality of an outcome reflected only in past experiences and therefore, with a limited capacity for change (Hirsch, 2017; Richardson et. al., 2020; Sambell, 2011).

The next section of this paper focuses on placing AtL within the current applications of formative assessment.

2.1. Formative assessments - for, of and as learning

Kampen (2020) stated there were six types of assessment used within an educational setting; diagnostic, formative, summative, Ipsative, Norm-referenced and Criterion based assessment. This paper focuses on addressing only formative assessment, which is directly linked to AtL.

Within the context of formative assessment there are currently three approaches; 1) assessment **for** learning which occurs when teachers use inferences about student progress to inform their teaching (formative assessment), 2) assessment **of** learning which is a way to find out what students have learned and if they're aligning to curriculum or grade-level standards (Kampen, 2020), and 3) assessment **as** learning occurring when students reflect on and monitor their progress to inform their future learning goals (formative assessment). The authors would like to introduce possibly a fourth formative assessment approach assessment to learning (AtL).

The unpacking of AtL is commenced by referring to Wiliam's (2016) belief that education is a process and not simply a destination. Wiliam's belief provides some guidance to the reader as to the direction this paper takes in explaining the authors' approach to formative assessment through AtL (Richardson et. al., 2020). Building on Wiliam's work, the authors commence by expressing the following views (See *Table 1* below) about formative assessment. Formative assessment should:

Table 1: What formative should focus on as viewed by the authors

Focus on the collective sharing of knowledge about the learning journey, and this knowledge is comprised of a number of successes and failures reflecting social constructivism.
Focus on learning based on the entire journey the learner takes to reach their destination.
Acknowledge that through the failures associated with a learner's journey that journey can be impacted upon by successes, as the journey unfolds, in a positive way through FAK as the participants engage in the journey.
Focus on changing a learner's learning failures into successes because as the journey unfolds this may cultivate the learner's enhanced understanding of their journey and therefore, possibly increase their engagement through responding to their needs. (This emphasises the 'how' something is undertaken as opposed to 'why'. The focus is therefore, on understanding the processes as to 'why' something is being done that way).
Focus on the successes and/or failures of a learner as this could cultivate knowledge for the participants to possibly use in the future.
Reflect a triangulation of communication involving the participants reflected in their past, present and future experiences.

Based on the views expressed in *Table 1* above AtL, the authors believe, reflects four fundamental premises. That:

• knowledge is acquired collectively through a shared learning process, and not simply the outcome of a process;

• this knowledge can be impacted upon, and changed, as the process unfolds from start to finish;

• this acquired knowledge could be *applied* to future assessment/s by the participants;

• by addressing the points above the participants could possibly become more *engaged* in their collective learning journey/s, via the sharing of successes and/or failures.

2.2. AtL: An approach to formative assessment

As previously stated, there are currently three approaches to formative assessment within an educational setting; *Assessment for learning*, *Assessment of learning* and finally, *Assessment as learning*. What the authors aspire to achieve in this paper is to introduce, and then explain, a fourth possible approach *Assessment to Learning*.

As highlighted by the Victorian (Australia) Government's Department of Education (VGDE) (2020) website *Assessment **for** learning* occurs when teachers use inferences about the learner's progress to inform their teaching. While, the VGDE continued, *Assessment **as** learning* occurred when the learner reflected on and monitored their progress to inform their future learning goals. *Assessment **of** learning*, as expressed by Kampen (2020), was a way to find out what learners had learned, and if this learning aligned to curriculum or grade-level standards.

Based on the three brief outlines above, the authors suggest, *Assessment for Learning* emphasises an impact on the teacher based on inferences, *Assessment of Learning* focuses on the teacher attempting to uncover if what was taught to the learner aligns with curriculum or grade-level standards, and finally, *Assessment as Learning* highlights the learner reflecting on, and monitoring, their learning to inform future actions. Therefore, the possible challenges posed by the current use of formative assessments, the authors suggest, are 1) that each might relate to a review of the outcome of a process and not the incremental development of the *entire* process, and 2) formative assessment is likely to be individualized and determined by either the learner or their teacher/s.

This lack of focus on the entire learning process, as outlined above, is highlighted, the authors argue, in the words 'progress' and 'review' and the phrase 'find out what learners have learned'. From the authors' perspective, the current use of formative assessment may not reflect an emphasis on the incremental development, facilitated through collective and shared communication, which could have occurred as the learner moves *through* the learning process. Instead, there tends to be a focus on simply reviewing the progress, the outcome of the process, by the teacher. Consequently, the current application of formative assessment is probably not connected, via a collective and shared approach to the gaining of knowledge, rather an individualist approach that fails to acknowledge the power of learning from the collective successes and failures of the participants shared within the group.

AtL addresses both the outcome of the process and also the constructive learning, which may have occurred during the *process **to** learn*, by the learner, their peers and their teacher/s. AtL achieves this trilogy of learning by viewing the process of learning as a collective of shared experiences. Whereby, the learning journey commences for the learner, their peers and teacher/s, through the *collective* experiences of the participants, which are then shared and impacted upon by the participants. Therefore, learning is a shared journey comprised of 1) the numerous collectively linked experiences of the learner, their peers and their teacher/s which 2) are accentuated by their past and present successes and failures, and 3) how those collective experiences could be cultivated, for example, shared, to provide the participants with the knowledge that 4) could be applied in the future. The application of future knowledge by the learner, their peers and teacher/s, is referred to, by the authors, as Future Actionable Knowledge (FAK) and is explored in more detail later in this paper.

By sharing these collective learning experiences, the authors contend the totality of the learner's, their peers' and their teacher/s' journeys can be used to focus on a learning process (journey) and not simply a destination (Wiliam, 2016). Consequently, by placing a greater emphasis on the learner's destination through the collective learning experiences of the participants, and then facilitate the sharing of those learning experiences, the participants, the authors argue, could be provided with sufficient knowledge to assist not only the learner but also their peers and teacher/s in reaching *their* destinations too. Later in this paper the authors may also refer to 'destination' as an assessment artefact. Where an assessment artefact represents the learning outcome the learner completes to highlight if what was taught aligns with curriculum or grade-level standards (Kampen, 2020)

As such, the authors outline possibly the main focus of formative assessment should be to address the building on the cumulative successes and failures, of the participants, in reaching a destination, via a sharing of an understanding of past, present and future acknowledge. This knowledge reflects the participants understanding of how that *specific journey* impacted on them, and their future journeys, through their past and present learning experiences. Therefore, these learning experiences, the authors suggest, are the successes and failures of the participants to cultivate knowledge that could possibly be used in the future.

The possible challenge with the current application of formative assessment, the authors highlight, is it focuses only on the learner, or their teacher/s, as individuals and not on the learning experiences associated with the participants. This individualist approach, the authors argue, may not provide participants with the opportunity to *learn* from the *experiences* of their learning journey and it is these experiences, which the authors contend, represent the bulk of the participants learning. The authors believe an emphasis on *how* the learning journey was undertake, by drawing on the learning experiences of participants, and then sharing these learning experiences, could enhance the future actions of the participants.

The authors suggest by addressing the learning experiences of participants, and then by sharing these learning experiences, there is 1) an emphasis on the processes associated with learning whereby, 2) present, past and future acknowledge is shared, which 3) possibly facilitates a focus on enhanced participant engagement in *their* learning. This enhanced engagement in learning could be the result of the learner, as Ferrara and Butcher (2012) highlighted, not simply being a passive recipient of knowledge rather, as the authors believe, an active player in their learning, via the learner's culminative knowledge acquired from the successes and failures associated with their learning, their peers and those of their teacher/s experiences of the entire learning process.

Critical to the formative assessment process, the authors acknowledge, and applied in AtL, is the development of a triangulation of communication between the participants. The reader should note that the authors refer to the triangulation of communication as Multi-Dimensional Discourse (M-DD), and this concept is outlined later below.

The authors suggest AtL occurs when knowledge is socially constructed, and then impacted upon incrementally, during the learning process due to the accumulation of the *knowledge* acquired from the successes and failures associated with the experience/s of the participants.

This knowledge, as expressed by the authors, positions participants to reflect on their learning experiences through the demonstration of their knowledge, as they move forward (Schimmer, 2018; Parry & Bamber, 2010), in a formally developed socially constructive learning environment towards the attainment of specific targets, which are then linked to an overall learning outcome. This formally developed socially constructive learning environment represents the incremental acquisition, and then application, of knowledge created through

the experiences of the participants reflected in the triangulation of communication between the learner, their peers and their teacher/s. This knowledge, created through the experiences of the participants, and provides participants with forward movement towards an overall learning goal is referred to, by the authors, as FAK.

These experiences, the authors argue, acknowledge the capacity of the participants to use their learning to impact on their learning journeys, through knowledge that assists the participants in moving forward (Wiliam, 2016). The authors refer to this forward movement, associated with this knowledge, as facilitated by FAK. The authors define FAK as the knowledge the participants acquire to demonstrate the attainment of intended learning outcomes (Richardson, et.al., 2020). Within the context of this paper intended learning outcomes relate to targets. The concept of targets is developed later in this paper.

The authors believe, FAK reflects the future *actions* of participants, which are demonstrated through applying their actionable knowledge, in the future, to attain a specific target (Richardson, et.al.) based on present and past knowledge. Therefore, AtL, the authors suggest, becomes a process facilitated by the present, past and future acknowledge of the participants. Where future knowledge reflects the demonstration, and application, of present and past knowledge (Richardson, 2019 a & b; Richardson, et.al.) by the participants moving forward (Schimmer, 2018; Parry & Bamber, 2010; Wiliam, 2016) incrementally towards a learning goal.

Taking the approach to learning above, the authors believe, AtL might be able to influence and impact on the learning process as it unfolds. Thereby, ensuring participants are not, as Ferrara and Butcher (2012) highlighted, simply passive recipients in their learning. Therefore, AtL, the authors argue, creates a learning environment where the learner has greater control over, enhanced ownership, and more understanding of the learning goal, by engaging with the stages of the learning process, via the shared learning experiences of the participants.

2.3. AtL - Planning the journey: the development of the learner's journey based on incremental stages of learning designed to reach a learning goal

AtL focuses on the view that learning is based on a collective, and shared, journey comprised of a number of linked experiences accentuated by successes and failures, and how those differing experiences could cultivate knowledge, what the authors refer to as FAK.

The reason behind AtL's focus on a collective, and shared, journey is to possibly impact on the engagement of the collective; the participants in their learning journey. The reader should note the collective refers to the group engaged in the learning journey, and as previously outlined, within the context of this paper, the collective represents of participants. The authors suggest, building on the work of Ferrara and Butcher (2012), by engaging participants in the learning

Table 2: Learning outcomes

devise their own key inquiry question;
conduct their investigation by - collecting, analysing and synthesising primary and secondary sources - locating and using information beyond your own knowledge and what has been provided in class;
write a historical essay based on research that has the following features - a hypothesis generated by the student - an introduction (which sets context, and includes your hypothesis and outline of the argument) -body paragraphs with topic sentences (where you analyse, evaluate and synthesise evidence from historical sources) - a conclusion (which draws together the main ideas and arguments) - appropriate spelling, punctuation and grammar;
practise ethical scholarship by using a recognised system of referencing to acknowledge the sources (including a reference list).

journey they are not simply passive recipients of knowledge rather, as the authors believe, active players, through knowledge (shared knowledge) acquired from the successes and failures associated with their experiences. Therefore, prior to commencing a learning journey participants should be engaged in the incremental development; planning, of their learning journeys with a focus on diminishing participant gaps-in-knowledge (Dann & Richardson, 2014; 2015; 2017). This incremental development, the authors stress, is initially jointly planned by teachers, and then reviewed by the learner and their peers to facilitate active participation.

An example of the application to this planning process, outlined above, is highlighted below in *Table 2* using the Queensland Curriculum and Assessment Authority's Grade 11 Modern History assessment artefact essay on the topic*: African-American civil rights movement, 1954 - 1968 (judgment in Brown v. Board of Education delivered - Kerner Report published)*.

The objectives for the task are outlined in Table 2 above, to transform these objects into AtL objectives, the authors contend, there is a focus on the process; *How*? Therefore, the AtL objectives are outlined below.

How to devise their own key inquiry question?

How to conduct their investigation by – collecting, analysing and synthesising primary and secondary sources - locating and using information beyond your own knowledge and what has been provided in class;

How to write a historical essay based on research that has the following features - a hypothesis generated by the student - an introduction (which sets context, and includes your hypothesis and outline of the argument) - body paragraphs with topic sentences (where you analyse, evaluate and synthesise evidence from historical sources) - a conclusion (which draws together the main ideas and arguments) - appropriate spelling, punctuation and grammar;

How to practise ethical scholarship by using a recognised system of referencing to acknowledge the sources (including a reference list).

The conversion from learning outcomes to targets is achieved by simply adding 'How'; the inclusion of 'How' changes a statement into a question. Consequently, the first target is, for example, to provide the learner with knowledge so that they can 'devise their own key inquiry question'. Therefore, by using 'How' the focus moves to a learning process and not simply an outcome.

Based on the information presented in the example above there are four learning outcomes, and the authors have converted these four learning outcomes into targets which are represented by the objectives that the teachers have initially highlighted are necessary for the learner to understand, For example, how to devise their own key inquiry question?

By converting these learning outcomes into targets the focus is on the learning process associated with achieving these individual learning outcomes. Therefore, within the target of '***How*** to devise their own key inquiry question?' the teacher will need to think critically about the learning process that might be required, for example, content, sequencing of content and pedagogy, to assist the learner in 'devising their inquiry question'.

This learning process above could commence with, for example, 1) the learner understanding of a hypothesis and 2) how a hypothesis is developed. The reader should note that this example reflects the content, and the sequencing of that content, however, there is no reference to pedagogy. Therefore, the process of learning is not simply encapsulated in the pedagogy, how the content will be taught, instead initially, *what* content is required, *how* will that content will be sequenced and then, *how* will that content be taught, within that sequencing?

The focus on the learning process above relates to the teacher engaging with each individual target so that the stages of learning, associated with attaining that target, are clearly articulated to the learner and their peers. This process is completed for each target, and, as a result, while there could be four targets, there

might be, for example, fifteen learning processes the teacher may have developed to achieve those four targets.

Once the learner has completed the learning process for the first target, they then move onto the second, then the third and then finally, the four targets. The view expressed by the authors is that by the learner completing the individual learning processes, for each target, will result in culminative knowledge, which should provide the learner with enough breadth, and depth, of knowledge to attain their learning goal.

Clearly, with respect to the initial *planning* of targets, the teacher/s provides the bulk of the guidance to the learner and their peers (Vygotsky, 1978). However, the main focus of this planning is to ensure initially the learner and their peers are provided with an overview, and an understanding of this overview, before commencing their learning journey. Additionally, this planning is also designed to assist in diminishing participant gaps-in-knowledge, thereby, facilitating the attainment of a learning goal.

The authors believe, based on the work of Dann and Richardson (2014; 2015; 2017) and Vygotsky, by actively engaging participants in the planning of their learning journey this might assist in providing both clarity and direction, exemplified in the exchange of shared knowledge through the collective. The exchange and sharing of knowledge, the authors believe, are facilitated through AtL, via M-DD. The next section of this paper focuses on M-DD.

2.4. AtL - M-DD: the exchange and sharing of present, past and future knowledge

The foundations to AtL reflect a focus on the collective, and the sharing of knowledge. This focus on the collective, and the sharing of knowledge, is achieved through the use of Multi-Dimensional Discourse *(*M-DD) a process whereby, knowledge is collectively acquired, and then shared by the participants and finally, turned into FAK, which can then be demonstrated, and applied, to attain the next target. The authors define FAK as knowledge that reflects the participant's *future* actions, which are demonstrated through applying their knowledge, in the future, to attain a target (Richardson, et.al.) based on present and past knowledge.

The knowledge that is collectively shared by participants is created via; Present, Past and Future Knowledge, whereby Future Knowledge is referred to as FAK. Based on the view knowledge is cultivated from the successes and failures of the participant *present* knowledge highlights the knowledge the participants are being introduced to. *Past* knowledge represents the *past* knowledge the participant brings to the classroom from previous successes and failures, while *future* knowledge is the future *demonstration* and *application* of knowledge by participants, which is based on the present and past successes and failures.

This future demonstration, and application, of knowledge highlights, the authors believe, the actions required by participants to move on to their next target, and then ultimately attain their final learning outcome, for example, the completion of a specific assessment artefact. The authors highlight this forward movement of knowledge is the outcome of a focus on FAK, via the use of Feedback-Feedforward Learning (FB-FFL). FB-FFL is explained in more detail below.

In FB-FFL knowledge is impacted upon by the participants; the learner, their peers and teacher/s through a social constructive approach. The learner, who works with more skilled learners (peers and/or teachers) creates FAK based on the more skilled participants (Dann & Richardson, 2014; 2015; 2017). Therefore, FAK represents a new stage, the authors believe, of cogitative development produced by FB-FFL due to the varying levels of the past knowledge of the participants (Vygotsky, 1978). It is important to note that the teacher is also viewed as a leaner because at times they too may require FAK from more skilled learners, for example, peers but also learners in their class/es.

The main focus of FB-FFL, the authors highlight, based on the work of Dann and

Richardson (2014; 2015; 2017), is to diminish the gaps-in-knowledge of participants, which facilitates forward movement towards the attainment of a learning goal; for example, an assessment artefact. This diminishment in participant gaps-in-knowledge occurs, the authors believe, due to the discourse, referred to as Multi-Dimensional, which occurs between the sharing of knowledge through Feedback (for example, refers to knowledge provided by the leaner to the teacher) and Feedforward which Feedforward relates to the knowledge (Future Actionable Knowledge) provided by the teacher to the learner, based on the learner's feedback, to move forward through diminishing gaps-in-knowledge.

The authors add to this view above that FB-FFL also assists in enhancing the critical thinking skills (Ennis, 1987; Halonen, 1995; Wales & Nardi, 1984) of participants, which is reflected in FAK. This statement is unpacked below.

Vygotsky (1978) defined the ZPD as "the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers" (p.86). By emphasising Dann and Richardson, Richardson et. al., (2020) and Vygotsky's work, the authors outline that FB-FFL focuses on the distance between the actual developmental levels, as determined by independent problem solving, and the level of potential development, as determined through problem solving, by the participants sharing their knowledge.

FB-FFL, the authors further outline by building on Vygotsky's seminal work, describes a learning process highlighting what might be accomplished by an individual learner versus what could be achieved with the assistance of others who had, for example, more educational acumen than the learner, for example, their peers and or teacher/s. Referring to Vygotsky (1978) the authors suggest a learner;

who works with more skilled learners (peers and/or teacher/s) could make;

what Vygotsky referred to as judgements, however, the authors suggest FAK, to;

model their own approaches to a task based on the more skilled learners, which;

leads to new stages of cognitive development for the participants highlighted by finally;

a focus on diminishing the participants gaps-in-knowledge (Dann and Richardson, 2014; 2015; 2017).

Expanding on Vygotsky's concept of the ZPD, the authors contend, learning is a social process through the individual learner's interactions with their peers and teacher/s. Like Vygotsky, the authors also believe, cognitive development occurs via the exchange of the learning experiences of the participants. This exchange of learning experiences, the authors suggest, building on Vygotsky and the contention claimed by Wales and Nardi (1984) and Halonen (1995) of problem-solving as one of the critical thinking skills, facilitates cognitive development because the participants became better problem solvers, and therefore, critical thinkers.

The authors highlight cognitive development, FAK, occurs due to the participants interacting with each other where their exists peers and/or teacher/s who were equipped with higher levels of acumen associated with that learning experience (Vygotsky, 1978) focusing on diminishing the participants gaps-in-knowledge for targeted areas (Dann & Richardson, 2014; 2015; 2017).

Based on Vygotsky's research and Dann and Richardson's work, the authors contend, participants can reflect on their personal present and past learning experiences, represented in FB-FFL, in connection with their collective and shared learning experiences in order to diminish gaps-in-knowledge for target areas. Whereby, participants may be in a better position to make more informed future decisions about their learning though the use of critical thinking skills (Halonen, 1995). Therefore, FB-FFL is

the communication of the collective and shared experiences of the participants through a focus on acquiring knowledge, which could be applied in the future, developed via Multi-Dimensional Discourse (M-DD) which is the communication that occurs between the teacher, the learner and their peers, via FB-FFL, that provides the learner with FAK to diminish gaps-in-knowledge. The diminishment of gaps-in-knowledge reflects the learning that may occur for the participants as each discovers or uncovers new knowledge from their learning journeys (Dann & Richardson, 2014; 2015; 2017; Richardson, et.al., 2020) to facilitate critical thinking skills.

The last section of this paper addresses diminishing gaps-in-knowledge and draws to conclusion an outline of the AtL process.

2.5. AtL - Diminishing Gaps-in-knowledge: A focus on FB-FFL

It is through participants, the authors believe, reviewing past learning experiences, and then being positioned to learn from, and then act on those past learning experiences in the future that their critical thinking skills could be impacted by FAK. The authors suggest by participants reviewing their past learning experiences may be supported in impacting on future learning decisions, demonstrated through a diminishment in their gaps-in-knowledge (Dann & Richardson, 2014; 2015; 2017), which may be the result of the enhancement of critical thinking skills; for example, problem-solving and decision making (Vygotsky; 1978).

Building on the previous work of Dann and Richardson and Vygotsky the authors highlight the following:

gaps-in-knowledge reflect knowledge that the participants may require to, for example, understand a concept or an idea specific to a target, which could be improved due to;

enhanced critical thinking skills as the participants engage collectively, via their shared learning experiences, facilitated by FAK, via FB-FFL.

The impacts on participant cognitive development, the authors outline, is exemplified by the participants, based on FAK, positioned to continuously focus on diminishing gaps-in-knowledge to address the forward movement of knowledge, reflected in the targets associated with the unfolding of the participants' journey. This diminishment in the participants' gaps-in-knowledge occurs by a focus on FAK, via FB-FFL, linked to the collective and shared experiences of the participants.

By acknowledging Vygotsky's work, and building on the previous work of Black, Harrison, Lee, Marshall, and Wiliam (2003), Black and Wiliam, (2003), Bloom, Hasting and Madaus (1971), Dann and Richardson (2014; 2015; 2017), and Walker (2009), the authors believe by diminishing the gaps-in-knowledge of participants could position them to make better informed future actions to impact on their future successes and failures.

The authors suggest participants could be able to make better informed future actions because these actions are; 1) based on shared learning experiences, 2) facilitated through collaboration over 3), a lengthy timeframe. This collaboration, the authors continue, which is based on a history of past learning experiences, provides the participants with numerous learning experiences emphasizing present and past learning actions, for example, successes and/or failures. These present and past learning experiences developed over a lengthy timeframe facilitate and reflect, the authors highlight, a possible diminishment in the participants' gaps-in-knowledge.

By possibly diminishing gaps-in-knowledge, the authors outline building on Vygotsky's work, participants might be able to make better-informed decisions about their learning through FAK. The authors further outline that FAK is facilitated by M-DD and, via, a focus on the continuous application of FB-FFL until the gaps-in-knowledge have been successfully diminished. It is through this continuous communication cycle of present, past and future learning experiences, the authors believe, participants' *present and past*

learning experiences could be transformed into FAK, as a result of possibly enhanced certain critical thinking skills.

A diminishment in participants' gaps-in-knowledge, the authors highlight, could therefore, be due to the application of FAK derived from the cyclic learning facilitated by FB-FFL; the continuous exchange of shared knowledge, communicated by the group, which focuses on learning that might impact on future actions.

3. Summary

The authors have suggested another type of formative assessment, AtL. At present there has been little research undertaken by the authors to substantiate the bulk of this paper. However, referring back to the statement made by late Sir Ken Robinson (2006) that:

Our education system has mined our minds in the way we strip-mined the earth for a particular commodity. We have to re-think the fundamental principles in which we are educating our children.

Sir Ken Robinson (2006)

The focus of this paper is not to prove to the reader, through research, AtL is a viable addition to formative assessment. Instead, suggest to the reader to re-think the fundamental principles by which the learner is currently being educated. Therefore, AtL, the authors hope, is simply one of the many attempts to re-think the fundamental principles in which learners are being educated.

One of the strengths, the authors contend, of AtL is a focus on engaging with the learner's entire journey by acknowledging these learning experiences reflect the successes and failures of the learner, their peers and/or teacher/s and then by cultivating those learning experiences into FAK.

By highlighting AtL, the authors believe, emphasises the power of the collective by acknowledging the impact of shared knowledge, while still accepting the need to influence the thinking skills of the individual through active participation within the collective. Though an emphasis on the collective, and ensuring learners are not just passive recipients in their learning, AtL possibly assists Vietnamese teachers in primary and secondary schools, in tertiary settings, to meet the challenges associated with the use of formative assessment due to heavy workloads (Can, 2019; Nguyen et al., 2021; Pham & Renshaw, 2015), big class sizes (Nguyen et al., 2020; Nguyen et al., 2021; Phan & Truong, 2020) and being a time-consuming activity (Nguyen et al., 2020; Phan & Truong, 2020).

A teacher focus on formative assessment should not simply reflect the difficulties surrounding its use within educational settings. Instead, formative assessment, which plays a seminal role in the education of the learner, and as outlined by AtL, their peers and teacher/s, should be viewed as essential to the needs of the learner. The authors believe AtL could provide the tertiary teacher with some capacity to use formative assessment within their teaching, via a focus on engaging participants in their learning journey.

By engaging participants in their learning journey, suggested through AtL, a tertiary teacher's workload could be 1) significantly reduced and 2) possibly the classroom setting might be more effective in engaging learners and therefore, 3) impacting on their learning. Ultimately, the authors believe, based on the AtL model, learning could become a process that engages the teacher, the learner and their peers through social constructivism, which eventually facilitates the collective and sharing of knowledge, through guided and planned incremental lifelong learning.

The authors welcome, and encourage, any possible future research linked to AtL that may test the validity of the views expressed in this paper. Formative assessment will continue to play a seminal role in the education of Vietnamese learners into the 21st century, and, as such, can no longer be placed in the *too hard basket*. Therefore, solutions need to be found relating to the use of formative assessment to specifically address the concerns expressed by Vietnamese teachers.

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