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A scoping review of action research in higher education: implications for research-based teaching

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ABSTRACT

Several scholars argue for a closer association between research and teaching in higher education, but it is unclear how research-based teaching can be actualized. Action research (AR) offers designs that position students as actors of the research processes, for example by doing research themselves or co-researching. Therefore, AR and research-based teaching can be considered mutually nested pedagogical and methodological processes. In this scoping review, we explored studies methodologically framed as AR which involve higher education students in the Humanities and Social Sciences as participants. We focused on (1) the research characteristics and (2) how the students were positioned in the identified studies. By reviewing 218 studies in line with inclusion criteria, we found three student positions: students as researchers, as learners and active contributors to research, and as source of information. We discuss implications for teachers/researchers who adopt AR and how they can develop research-based teaching involving students as researchers.

Introduction

It is widely argued that research and teaching should be more closely associated in higher education (Brew 1999, 2012; Griffiths 2004; Hattie and Marsh 1996; Rowland 1996) but there are still unclarities as to how research-based teaching can be fruitfully actualized (Brew 2012; Griffiths 2004). Despite varying conceptualizations, research-based teaching can be understood as a process of student engagement in learning through research, wherein 'the students become participants in the process of creating knowledge' (Griffiths 2004, p. 721). Such engagement may include researching while learning, co-researching with their teachers, or in other ways actively contributing to teachers' research.

The underlying rationale and the motivations for research-based teaching may differ among institutions (Brew 2012). Motivations may be responses to various structural changes in higher education, such as the competition between teaching- and research time (Hattie and Marsh 1996) and/or changes in the characteristics of research and

teaching in higher education (Rowland 1996). A second body of arguments are more informed by assumed student gains and learning outcomes and include the following premises: (a) that higher education pedagogy design needs to be oriented to recent research (Strømsø 2016), (b) that teachers' research activities positively affect students' evaluations of teaching (Stack 2003) and their potential to become academics (Brew 2012), (c) that research-based teaching may promote student learning and competence in critical reflection and independence (Strømsø 2016), and (d) that research-based teaching may create a positive shift in the teacher-student relationship (Griffiths 2004). The contribution of research-based teaching is also key to improving the process of learning, which can promote students' critical faculties for the following four reasons: they are able to refer to multiple resources, go beyond the teacher-led course context and materials, become more inductive, discovering knowledge by transcending the potential limitations of teacher instruction, and finally, develop competence in autonomous learning and gain a sense of freedom. Students appreciate their teachers' research activities if it leads to greater understanding, greater enthusiasm for learning and teaching, advances in the relevant skills, and finding motivation to engage in their own research (Hajdarpasic, Brew and Popenici 2015). In parallel, students' engagement in research activities can lead to developments in areas such as creativity, alternative thinking, analysis, interpretation, synthesis, and research ethics (Kinkead 2012). Academics' effort and investment in enacting research-based learning is also the key to developing students' knowledge for research, also benefiting the research culture of their own fields (Hoskins and Mitchell 2015). Despite the emphasis on benefits of research-teaching integration in numerous studies, there is still a lack of clarity as to how research-based teaching can be put into practice (Brew 2012; Griffiths 2004). We argue that action research (AR) provides a promising point of departure for realizing research-based teaching, as AR and research-based teaching can be understood as mutually nested methodological and pedagogical processes. As an approach to educational and social research (McTaggart 1994), AR offers designs that position students as integral actors of the research processes and is hence a powerful tool to develop research-based teaching activities.

AR involves the use of students' practical knowledge and skills for a variety of purposes, including the development of research skills, the improvement of practice, and the growth in student's roles as change agents with a strong professional voice (Papadopoulou 2021). Several studies engaging students as AR participants in education aim to elicit feedback or critical views of students on teaching practice (Banerjee 2013) with the aim of improving the learning environment (Gibbs, et al. 2017), encouraging deeper learning (Darling-Hammond and Oakes 2021), yielding improved teaching and learning (Jennings, Kensbock and Kachel 2010), and developing a sense of student empowerment (McAllister et al. 2013). The impact dimensions reported in these studies recognize the value of student voices in providing knowledge that directly impacts education. The reflective process potentially enacted through AR integration in teaching and learning paves the way for seeking knowledge (Gibbs et al. 2017), which can transform practice and inspire deeper engagement among students (Huang, Rauch and Liaw 2010), and develop awareness in being and becoming active reflective students (Duenkel and Pratt 2013).

AR is a practically oriented research approach whereby the process promotes researchers and participants understandings and mindsets. AR aims to address problematic situations in contexts including classrooms or communities and is conducted

with a particular goal of exploring relevant theory and practice through data collection, analysis, and reporting (McKenney and Reeves 2021). This research orientation can provide a foundation for research-based teaching in education. Drawing on the premise that research-based teaching and AR are mutually nested processes, this scoping review aims to explore the studies methodologically framed as AR which involve higher education students in the Humanities and Social Sciences as participants. We specifically focus on these academic disciplines as research finds a stronger positive relationship between research and teaching in supposedly 'soft' disciplines, such as humanities and social sciences, than in 'hard' ones, such as natural sciences (Feldman 1987). By documenting the integration of research into teaching/learning in university contexts, it will become possible to theorize the student-engaged research practices of university teachers/researchers. The following research questions are investigated:

(1) What are the characteristics of Action Research studies which involve university students as participants?
(2) How are the students positioned by university teachers in action research among the existing studies?

These questions are significant because in higher education, students are expected to engage in research to develop their research and inquiry skills. In AR, students can be positioned as co-researchers or even as researchers. Nevertheless, to our knowledge, no systematic review has been made of either students' positions in AR in higher education, or the characteristics of such research. Our review therefore can raise awareness of the need for research-based teaching since there is dearth of reviews that examine the critical contribution of research engagement on students' process of learning. Moreover, our scoping review can identify and address gaps that may be a point of departure for future research- and pedagogical practices in higher education.

This review has a fourfold structure. We will first provide a more in-depth account of research-based teaching, action research and the link between the two, before presenting the methodology and research findings. Then, we will discuss implications of our findings for researching teachers who adopt AR and how they can develop research-based teaching involving students as co-researchers.

Research-based teaching and action research

According to McTaggart (1994), action research is 'a broad church' (p. 314), and the same may be said about research-based teaching. As argued by Griffiths (2004), 'providing a common setting for both research (knowledge advance) and teaching (the education of practitioners), universities open up possibilities for *different forms of mutual interaction*, or synergy, between these two types of activity' (p. 709, our italics). Hodson (1992) distinguish between students learning *from* research (acquire knowledge of important theories and research in their fields of discipline), *about* research (gain knowledge of research (e.g. methodologies, methods, and techniques) in teaching courses) and *through* research (acquire knowledge of their discipline by doing research themselves). Healey (2005) highlights three dimensions of research-teaching integration: *the research focus* (the content versus the process of research), *the role of the students*

Table 1. Four dimensions of research-based teaching.

1. Research-led: learning about current research in the discipline.
Focus: to ensure that *what* students learn clearly reflects current and ongoing research in their discipline. May include research done by staff teaching them.
2. Research-oriented: developing research skills and techniques.
Focus: developing students' knowledge of and ability to carry out the research methodologies and methods appropriate to their discipline(s).
3. Research-based: undertaking research and inquiry.
Focus: ensuring that as much as possible the student learns in research and or inquiry mode (i.e. the students become producers of knowledge not just consumers).
4. Research-tutored: engaging in research discussions.
Focus: students and staff critically discussing research in the discipline as, for example, in many seminar-based courses.

Source: Table adapted from Healey et al. (2014, p. 17).

(students as audience versus students as participants of research), and *the focus of teaching* (teacher-focused or student-focused). Ultimately, Healey et al. (2014) suggest four dimensions of research-based teaching, including *research-led, research-oriented, research-based,* and *research-tutored* (see Table 1 for a fuller descriptive overview).

There are several overlaps among these conceptualizations of research-based teaching, and in this review, we particularly argue for a fruitful linkage between AR and teaching that is *research-based*, by students undertaking research and inquiry (Healey et al. 2014). Synonymous descriptions are student learning through research (Hodson 1992), wherein they learn the process of research by being participants of research (Healey 2005).

Such a marriage is fruitful as AR is an approach to research where all significant parties join forces to improve the theory and practice, for example of education, social welfare, and health (McTaggart 1994). Students possess a unique and valuable set of knowledge and perspectives (Levin 2000), which, when synthesized with expert knowledge, could generate novel pedagogical knowledge for improved teaching (Halliday et al. 2019) and research contributions. Nevertheless, this partnership view may contrast the traditional relationships researchers have with others (McTaggart 1994), and possibly students in particular. Therefore, for successful co-researching between students and their researching teachers, it is important that researchers acknowledge multiple voices and perspectives and work towards a power balance between all parties involved. AR is not merely about learning; it is more about knowledge production and the improvement of practice (McTaggart 1994). AR typically involves a cyclical process of problem identification, data collection, analysis, and action planning with the aim of generating knowledge that can be applied in real-world settings to improve practices and outcomes (Stringer 2014). Hence, AR offers designs for enacting research-based teaching in practice.

There are varieties of AR, and we suggest that participatory action research (PAR) and critical participatory action research (CPAR) may be particularly relevant to realize research-based teaching initiatives. Overall, PAR can be seen as a type of AR that places a greater emphasis on participatory and democratic approaches to research, and that seeks to empower the participating individuals and communities to take control over the research process and the results. Overall, a distinction between AR and PAR is also that AR is a collaborative approach to research that is initiated by researchers, while PAR is a participatory approach to research that is initiated by participants, who are co-researchers in the process (McTaggart, 1994). The research being student-focused rather than teacher-focused (Healey 2005) is relevant in research-based teaching, as students may be the closest people to the problem. For example, if the goal is to change

teaching practices or educational programs, students have first-hand experience of the problem area. PAR also seeks the development of theoretically informed practice for all parties involved (McTaggart 1994). Hence, even though teachers are more experienced in undertaking research activities, PAR acknowledge both students and researching teachers as learners. CPAR expand on the apparatus of PAR by also emphasizing the importance of addressing power imbalances, social inequalities, and structural oppression in the research process (McTaggart et al. 2017). This perspective may be particularly relevant in research-based teaching initiatives as students have traditionally been positioned as the less knowledgeable relative to their teachers.

Methodology

Scoping reviews are commonly associated with mapping the extent, range, and nature of research activities to convey the breadth and depth of a topic area (Arksey and O'Malley 2005; Levac, Colquhoun and O'Brien 2010). Scoping reviews are increasingly popular and have also been used to review higher education research (e.g. Li, Lund and Nordsteien 2021). Such reviews are particularly suitable to make sense of an abundant volume of primary research (Colquhoun et al. 2014), which was anticipated in this review. Moreover, convergent to our purpose, scoping reviews are useful when the interest is in mapping fields of study rather than describing research findings in detail (Arksey and O'Malley 2005). Our purpose for conducting this review is aligned with Ehrich et al.'s (2002) twofold purpose: 'both to map a wide range of literature and to envisage where gaps and innovative approaches may lie' (p. 28). We used Arksey and O'Malley's (2005) five-stage methodological framework comprising (1) identifying the research question, (2) identifying relevant studies, (3) study selection, (4) charting the data and (5) collating, summarizing, and reporting the results.

Identifying the research question

The research question outlined in the introduction seeks to map (a) the characteristics of AR in the Social Sciences and the Humanities which involves university students as participants, and (b) how students are positioned in this research. Not only does this research question explore the nature of such research, but also how students are positioned (e.g. as co-researchers, learners, source of information). This latter aspect is important to explore, as positioning students as integral actors of the research processes lies at the core of AR.

Identifying relevant studies

In line with our research question, search terms were developed to capture research in higher education where students are participants in the process of creating knowledge. To cover a breadth of relevant literature, we followed Arksey and O'Malley's (2005) suggestion of using broad search terms. Literature searches were performed in Scopus and the search engine EBSCOhost, including the electronic databases Academic Search Premier, the Education Resources Information Centre (ERIC), and SocIndex. The selection of databases and literature searches were guided by a specialized librarian in the Social Sciences and the Humanities.

Table 2. Inclusion and exclusion criteria.

Inclusion criteria	Exclusion criteria
a. Students as participants of research	a. Other participants of research
b. In higher education	b. Other educational levels
c. Social Sciences or Humanities	c. Other higher education disciplines
d. English language	d. Other languages
e. Peer-reviewed original research articles	e. Non-refereed publications/grey literature

The search string used in EBSCOhost was (student* AND (university OR college OR higher education) AND participant* AND action research*). Searches were limited to English and scholarly journals. No limitations were set on publication date or study design, and no geographical limits were set. The literature search was conducted on 23 June 2021. Table 2 depicts the inclusion and exclusion criteria in detail.

Study selection

The search strategy yielded 1046 articles in total. Duplicates were removed, and 795 unique articles remained. These articles were first screened by title and abstracts in Zotero by both authors simultaneously, and 403 articles not complying with the inclusion criteria were excluded. Most of these were excluded as the research was performed in K-12 school contexts ($n = 280$). The abundant research performed in school contexts can be explained by our broad search terms used to describe research context (such as university or college or higher education), which were used to avoid dismissing relevant research. The 392 remaining articles were transported to the systematic review tool Rayyan Systems Inc. to gain a better overview of the data material through a two-stage screening. Articles were again screened by title and abstract to fine-tune our data according to our inclusion criteria. In the next stage, the full text of the articles was reviewed by both authors independently to map potential disagreement in assessment of article inclusion/exclusion. Disagreements were discussed and resolved. Through this process, we excluded 174 articles, leaving 218 articles remaining for analysis. Figure 1 portrays our article selection process by means of a modified version of the PRISMA 2020 flow diagram (Page et al. 2021).

Charting the data

The next stage involved charting key items of information from the articles (Arksey and O'Malley 2005). We recorded the following information: Author(s), Year of publication, Methodology, Method, Sample, Country, and Purpose of including students (see Appendix). This information enabled us to answer research question 1, regarding the characteristics of the AR studies. To answer research question 2 (how students are positioned in these studies), we did not rely on a particular set of predetermined categories or frameworks. Rather, we familiarized ourselves with the articles through an inductive process. This allowed us to induce three major student positions in the research studies: *Students as researchers* (level 0), *Students as learners and active contributors to research* (level 1) and *Students as source of information* (level 2). Level 0 refers to studies where students were autonomous in conducting research and contributing to knowledge generation and discovery. Level 1 refers to the studies in which students contribute to research as participants engaged in research activities characterized as
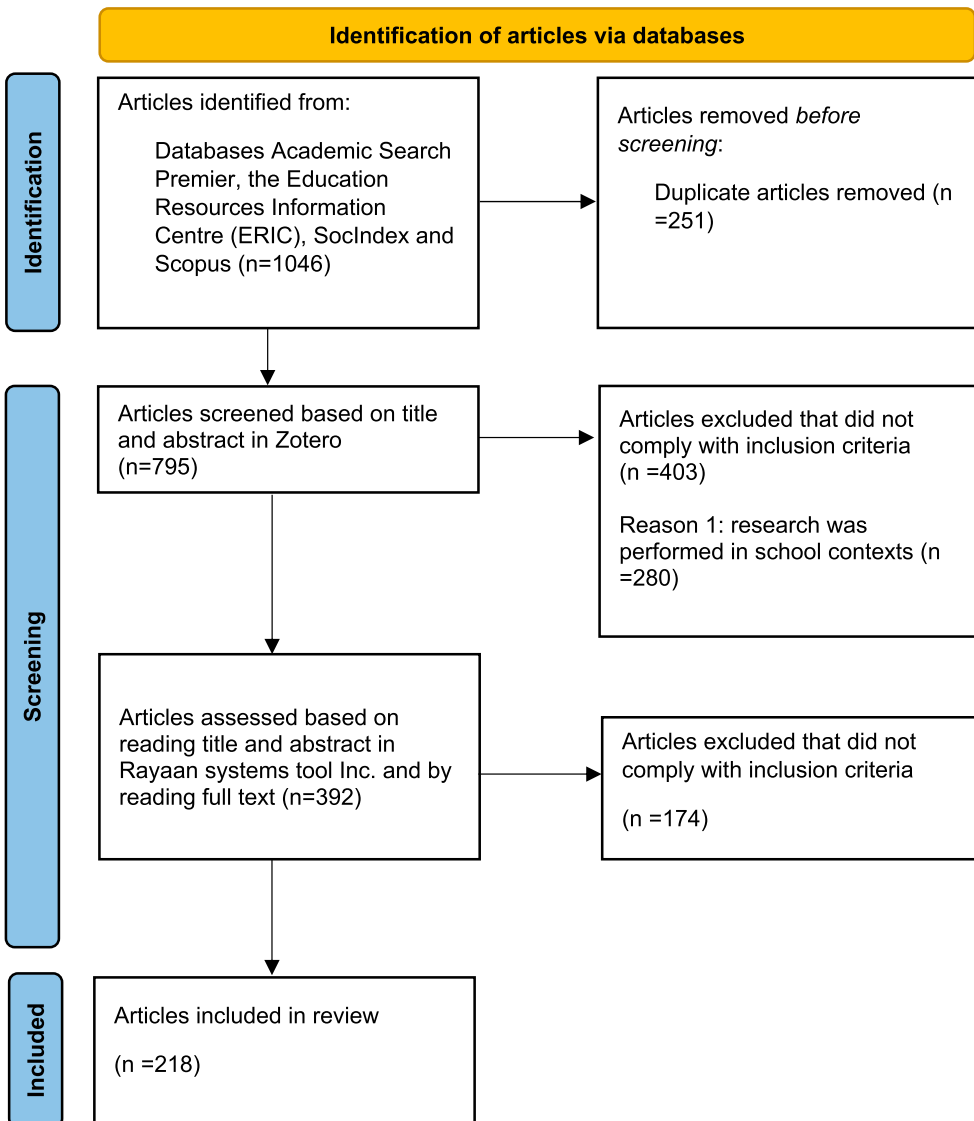
Figure 1. Flowchart of search outcomes and selection process.

longitudinal design, and learn the content of intervention, but without engaging in the data analysis and interpretation. Level 2 includes studies where students participate in one-shot short intervention or regular seminar or conference attendance where the impact is measured quantitatively and/or qualitatively.

Limitations

Our review considers a wide range of studies. Nevertheless, there are limitations of using a database search strategy with specific keywords, particularly, the risk of omitting relevant articles due to our search strategy. Grey literature (e.g. unpublished studies,

conference abstracts, book chapters, various research reports) was not included as it may be difficult to access and is not always subject to a rigorous peer-review processes, which might affect its quality (Bellefontaine and Lee 2014). Nevertheless, we acknowledge that our search strategy, for example by exclusion of grey literature may have omitted research relevant to our research questions.

Results

Characteristics of the reviewed articles

Table 3 displays the characteristics of the studies including frequency, research paradigms, locations, and students' roles. The overall distribution by research paradigms shows that there were 140 qualitative designs in total spread across the three levels (0, 1, 2), i.e. 64% of the total 218 (see Table 3). This is promising, in that more than half the studies had an inquiry and research orientation for students. There were 62 mixed methods studies in the corpus across all the levels 0 1 2 (28%), showing that there is a tendency to position AR as academic research for the purpose of triangulation of methods. The AR researchers appear to consider the methodological robustness of the findings by adding quantitative data results to the qualitative findings. Finally, we identified 16 studies, amounting to 8% of all the studies, that adopted a quantitative approach to data collection and analysis categorized as level 2. It appears that there is awareness that quantitative research designs are relatively less relevant to engaging students in the research process.

We also identified in our review that research-based learning embodied in AR studies are more often conducted in the US and UK (36 and 24 respectively) in level 0 and 1, suggesting more awareness and focus on student-engaged AR and students' participation in research for developmental and learning purposes in these contexts, as opposed to research for generating generic knowledge for academia. See appendix for a full geographical distribution.

Table 3 also displays the distribution of articles identified at the three types of positioning which emerged from the data, which include level 0: students as researchers,

Table 3. Descriptive characteristics of the studies.

Student positioning	Frequency (n = 218)	Study designs	Countries	Students' roles
0 as researchers	35 (16%)	Qual.: 31 (88,5%) Mixed: 4 (11,5%)	US (n = 14) UK (n = 5)	Researchers, co-researchers, co-inquirers, co-designers
1 as learners and active contributors to research	126 (58%)	Mixed: 32 (25,4%) Qual.: 94 (74,6%)	US (n = 22) UK (n = 19) Turkey (n = 12)	Reflective learners, reflective writers, inquirer, critical thinkers, critical friends, problem solvers, collaborators
2 as source of information	57 (26%)	Mixed: 26 (46%) Quan.: 16 (29%) Qual.: 15 (27%)	US (n = 10) Turkey (n = 7)	Data provider

level 1: students as learners and active contributors to research, and level 2: students as source of information. Out of the total data corpus of the articles we defined the emerging levels of students' participation in AR as 0, 1, and 2 with the percentages of 16%, 58%, 26% respectively. In terms of students' roles in the AR, we found specific role descriptions. For example, level 0 studies positioned their participating students as *researchers* (Hanfstingl et al. 2020)*, co-researchers* (Bland and Atweh 2007)*, co-inquirers* (Liao 2020)*, and co-designers* (Santos et al. 2016). On the other hand, level 1 studies positioned the students as *reflective learners* (Gutiérrez et al. 2019), reflective *writers* (Threlfall 2014), *inquirer* (McMorl et al. 2003, May), critical *thinkers* (Hazaea 2020), *critical friends* (van Swet et al. 2009), *problem solvers* (Satchwell et al. 2015), and *collaborators* (Miño-Puig-cercós et al. 2018). These roles include critical engagement in research, inquiry, and pedagogical activities potentially providing students with deeper learning opportunities. Although not explicitly stated, Level 2 studies, as we analyse, position the participants as mere data providers neither engaging them in the activities longitudinally nor encouraging them to reflect on their process of learning (Ruohotie-Lyhty and Moate 2015). Each level implies a different degree of benefit and engagement process in AR, described in the next section.

Students' positions in action research

Level 0: students as researchers

Level 0 refers to the engagement that identifies the students as active and autonomous participants in research and inquiry and contributing to the knowledge generation and discovery. Of the total data corpus, 16% of the articles were categorized at level 0. Students are positioned as *researcher* (Cabaroglu 2014; Hanfstingl et al. 2020) *co-researcher* (Bland and Atweh 2007), *co-inquirers* (Liao 2020)*, co-designer* (Santos et al. 2016) by also developing research knowledge, skills and awareness while learning the content of the course to achieve learning objectives. In Liao (2020) we see that students are explicitly positioned as co-inquirers and expected to understand professional learning in practice,

> The CVN approach conceptualizes professional learning as a process in which *teachers and students of professional education work collaboratively as 'co-inquirers'* to understand and enhance professional learning in practice. (p. 1, our italics)

Santos et al. (2016) similarly positioned the students as co-designers in AR cycles in which they learnt how to design a virtual learning environment to support learning activities:

> Using a collaborative action research, project participants explored the design and implementation of a virtual learning commons to support learning activities. Two action research cycles were implemented where *students acted as co-designers*. (p. 8, our italics)

In another study, Cabaroglu (2014) engaged her students in AR to help them improve their practices through research and inquiry, where students played an active role in their own development through reflection on their practices as part of an AR.

> The course was designed to help prospective teachers understand and improve their classroom practice and adopt an inquiry-based approach to learning and teaching while contributing to their knowledge base. (p. 79)

Similarly, Hanfstingl et al. (2020) positioned their students as researchers who conducted action research into language teaching,

> All participants are required to plan, carry out and document their own action research project. The team provides input on action research and current topics in language teaching and learning and advises participants. (p. 71)

Burress and Peters (2015) highlighted that '[…] the instructor positioned herself as part of the group, and she and students assumed mutual responsibility for joint construction of new knowledge' (Burress and Peters 2015 p. 3). Some level 0 studies, such as Cabaroglu (2014) and Bland and Atweh (2007), report on projects wherein students were positioned as co-researchers or becoming researchers in and through AR. It is possible to argue that these articles should be labelled as level 1 because they do not include participants as co-authors in the specific articles. Nevertheless, we coded them as level 0 to make them visible in this scoping review. Schissel et al. (2019) co-investigated their teaching and included their students as co-researchers to this end:

> […] we detail our methodological approaches and include views about the resulting assessment as reported by the pre-service teachers in post-assessment questionnaires and stimulated recall-interviews. This work points to the promise of adopting approaches that position researchers as individuals who promote and help advance the goals and values of participants. (p. 393)

These are good examples of university students being positioned as (co)researchers, but the percentage of the coverage in the whole corpus was only 13%. Moreover, in level 0, two or more articles may refer to the same study (same participants and methods but with different authors listed) (e.g. Kalsoom et al. 2021, Kalsoom and Khanam 2017). We decided to count individual publications/articles even though they might be from the same data material

(i.e. we counted the multiple articles published based on that one study, rather than regarding them all as a single study). Moreover, sometimes it is difficult to assess whether articles stem from the same data material when it is not specifically expressed in the body of the articles (e.g. Lew and Mohsin 2011, 2013).

Level 1: students as learners and active contributors to research

Level 1 refers to the studies in which students contribute to research as participants who engage in research activities characterized as longitudinal design and learn the content of intervention without engaging in the analysis and interpretation of data. Out of the total data corpus, 58% of the articles were categorized at level 1. Studies categorized in this level position students as, for example reflective learners (Gutiérrez, Adasme and Westmacott 2019), writers (Threlfall 2014), inquirer (McMorl et al. 2003, May), critical thinkers (Hazaea 2020), critical friends (van Swet et al. 2009), problem solvers (Satchwell et al. 2015), or collaborators (Miño-Puigcercós et al. 2018) who reflect on what, how, and why they learn through longitudinal exposure to reflection. For example, Pavez (2021) initiates a dialogic process with the students as co-generators to elicit their voices that could shape how to teach and how to improve the course:

> As learning and teaching theory experts, university educators are constantly asked to review and reflect on their methodologies and to co-generate them with all members of the

educational community. Teachers understand that students constantly shape the object of study, and thus, embrace differences among individuals. In this context, a dialogic approach to interpreter education invites educators to promote myriad voices within classrooms. (p. 360)

Using appreciative inquiry to include students in the improvement of the course and their learning process, Jones and Masika (2021) highlights the role of the students and their pedagogical gains as follows:

> […] AI focus groups were a way for participants to explore and discuss positive perceptions and experiences of starting university. They also enabled participants to discuss problems, solutions, and ways to enhance pedagogy and support, contributing to educational development at course, institutional and sector-wide levels. (p. 279)

Kurek and Müller-Hartmann (2019) positions students as the designers of potential tasks which they might use in their future role as teachers, which shows how students can be engaged in learning to shape their future teaching practices:

> The study covers three iterations of such an exchange between three different cohorts of Polish and German EFL student teachers working on international teams to design technology-based intercultural tasks for their future educational contexts. (p. 52)

Gutiérrez et al. (2019) engaged their students in reflective practice during practicum and thematized the ways in which their teacher identities were strengthened:

> […] participants developed confidence in their ability to problem-solve, their appreciation of collaboration grew, and they became more aware of the need for teachers to change. (p. 53)

Level 2: students as source of information

Level 2 includes studies where students participate in one-shot short intervention (Wette 2010; Kashef et al. 2012; Kee, Osman and Ahmad 2013) or regular seminar or conference attendance (Shin 2020; Little 2020) where the impact is measured quantitatively and/or qualitatively. Of the total data corpus, 26% of the articles were categorized at level 2. The chances of pedagogical and learning gains is relatively lower since due to a shorter process of engagement in research activities during and after the interventions, and the focus is on measuring or exploring the influence for instrumental research purposes. The role students play in all studies in this level can be characterized as data-provider (Ruohotie-Lyhty and Moate 2015), providing minimal learning benefit. McLaughlan (2021) draws on a mixed method AR where students provide open-ended responses without any clear benefit to themselves, 'This mixed-methods case study qualitatively analyses open-ended responses utilizing a Grounded Action Research approach along with follow-up interviews of ITAs [international graduate teaching assistants]' (p. 177). Nel and Marais (2020) similarly describe a research design where students provide perceptual data on a course rather than reflecting on the course content:

> […] all participants perceived the teaching practicum experience via WhatsApp to have contributed to the formation of a community of practice that resulted in feedback and assessment being focused on a core teaching practice, namely explaining subject-specific content. (p. 629)

Cabrera-Solano et al. (2020) sought to collect student data to identify the factors affecting student engagement using a mixed methods design. The authors do not note

student awareness of the factors and how these could impact their future teaching in the environment: 'The aim of the present study is to analyse the factors that contribute to engage students in active learning by using the Web tool "Formative" on mobile devices' (p. 252). Alotumi (2018) conducted a quasi-experimental design where student responses were used in statistical analysis to generate a generalizable result, which is generally not the main concern for AR. In such design, the author appears not to mention any potential gains for their participating students:

> The sample of study consisted of 30 adult students randomly assigned to experimental and control groups. Data was collected within an 8-week period via a pre-test/post-test design for equivalent groups. The experimental group participants were also interviewed to elicit data about their attitudes towards CALL. (p. 50)

Discussion

Higher education policies advocate for research-based teaching in universities, which entails students developing research skills and inquiry to achieve the learning objectives of a course. AR can facilitate research-based teaching practices by involving students as active participants in the research process and promoting a closer alignment between research and teaching practices. In our scoping review we analysed 218 AR studies with the purpose of understanding and revealing how students are positioned in AR in higher education. We found that students were positioned mainly as learners or as a source of information (84%), rather than as co-researchers (16%). Hence, rather than being positioned as active participants in research, students were mostly positioned as an *audience* (Healey 2005). We also identified that the rationale for choosing AR as the research method was not clearly or explicitly justified in all studies. As collaboration between researchers and stakeholders is key to AR (Stringer, 2014), student engagement in research may not be the primary reason for doing AR. Hence, even though the forms of research identified at level 1 and 2 are labelled 'Action Research', it can be questioned whether there has been a genuine collaboration, building on democratic participation between students and teachers in the research process.

There may be several reasons for why the student positions at level zero (researchers, co-researchers, co-inquirers, and co-designers) are underrepresented in our data material. Doing AR can be a time-consuming process, and researching teachers may struggle to find the time and resources to engage in student-teacher collaborative research while also teaching and fulfilling other responsibilities. Moreover, university management and other stakeholders may be resistant to changes in teaching practices or sceptical of the benefits of AR with students. Consequently, universities may not provide adequate resources, support, or training for researching teachers who are interested in conducting AR or implementing research-based teaching practices. Resistance among students may also be relevant. Students may be resistant to taking on a researcher role, for example because this may contrast traditional views of the power relations between teachers and students. Nevertheless, in line with the ideas of CPAR, such collective inquiries represent a transformative approach to research where power imbalances are challenged (McTaggart et al. 2017). This review had no geographical limitations, and our findings show geographical variations in the prevalence of AR in higher

education. This may suggest more positive mentalities towards engaging in such research in certain parts of the world (the US and UK were particularly prevalent). Nevertheless, there may also be research ethical variations across countries, making it harder to obtain research ethical approval in some parts of the world.

The barriers mentioned above may pave the way for prioritizing other, less timely forms of teaching-research integration than research-based teaching (wherein the students undertake research themselves) (Healey et al. 2014). For example, student engagement where students learn from research (gaining knowledge of theories and research in their fields of discipline) and about research (gain knowledge of research processes) (Hodson, 1992). Over half of the studies in this review were categorized at level 1 (58% of the total data corpus).

At this level, students contribute to research as participants who engage in research activities, for example by learning the content of research without engaging in the analysis and interpretation of data. This description resembles student learning from and about research (Hodson, 1992). Nevertheless, in line with Visser-Wijnveen et al. (2010) we argue that an ideal teaching-research nexus can be achieved through five teaching activities including teaching research results, making research known, showing what it means to be a researcher, *and* helping student to conduct research and gaining research experience.

Implications for researchers and educators

We argue for re-positioning students in AR so that students contribute to the teachers' process of producing knowledge as researcher and/or co-researcher while learning content in and during research. This review provides an array of examples of how such research initiatives can be fruitfully actualized (see the full list of level 0 studies in Appendix). The studies conducted at level 0 resemble PAR and CPAR (i.e. (critical) participatory action research) as students and teachers are co-researchers who are actively involved in the design, implementation, and evaluation of the research process. Characteristic for level 0 studies is collaboration and democratic participation among all parties involved. Moreover, we discovered a proneness to power dynamics (explicitly or implicitly) in these studies.

Nevertheless, such research is still underrepresented (16% of total) and further cultivation of such student engagement requires a supportive institutional environment, appropriate training and resources, and collaboration among university staff and management and other stakeholders to overcome resistance to change.

Students possess a wealth of knowledge that can contribute to pedagogical and social issues, and we argue that we need to emphasize a teacher-student collaboration by granting equal status to students, namely the 'researcher' position as an alternative to the 'student' position. This presupposes critical examination of power relations, social structures and cultural assumptions linked to these positions. From a pedagogical aspect, teachers need to be more explicit and reflective on the student-researcher position and transform their teaching in line with research-based pedagogy, as reified through AR designs. In addition, Level 0 showcases students as co-researchers but not necessarily as co-authors (i.e. Bland and Atweh 2007). Co-researchers can also become co-authors if the contribution is in line with the Vancouver Recommendations for authorship.

In conclusion, we argue for a teacher-student collaboration by granting status to students as co-researchers, emphasizing the socio-political aspect, and repositioning students in AR to contribute to the process of producing knowledge. By doing so, research-based teaching and AR can be mutually supportive, with the key procedural elements of the former leading to developing the latter in the classroom, by positioning students as partners at the epicenter of the research process. Explicitly positioning students as researchers with roles such as co-designers, co-researchers, data analyzers, etc., will help them reflect on the learning process and course content. Finally, research focused on AR needs to highlight its links with student learning, and the understanding of this link needs to be strengthened.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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