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Education without intelligence: should the concept of intelligence be eliminated from educational discourse?

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ABSTRACT

This paper argues that educators ought to treat the word 'intelligence' much like the word 'stupid' and avoid using it in educational settings. This is primarily in response to the continued use of intelligence testing in the US and UK, where it serves two purposes: in selection practices for competitive opportunities, and to provide tailored support to students. Using a conceptual engineering methodology, I ask whether these functions of the concept 'intelligence' in educational practices justify its use in educational discourse. By pointing to the harms associated with the concept of 'intelligence,' and considering three different possible ameliorations of the concept of 'intelligence' as it is used in education, I conclude that its use should be eliminated.

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Intelligence in education

When I worked as a school teacher in England, our incoming students were asked to sit a general intelligence style test to determine how well they were expected to do in their national exam results. One school used Fisher Family Trust's Benchmark estimates to set targets for students and to track their progress and the school's progress against their expected outcomes (https://fft.org.uk/fft-aspire). Another school used Cambridge Centre for Evaluation and Monitoring's (CEM) Midgys testing (https://www.cem.org/midyis) for the same purposes. Students would sit computer based tests when they entered secondary school that would then be used to provide that student with a set of predicted grades for later national exams.

These predicted grades would be shared with students in the form of targets, and also used to judge whether teachers were serving their students well or not by measuring they 'value' being 'added' to their baseline scores. A later set of testing was used to predict the exams students sat at the age of 18; the same process was repeated and an algorithm combined their results with their prior attainment to create new targets for them. These targets were used by the schools I worked at as predicted grades which were shared with the universities the students applied for. Students were having their intelligence judged

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from the outset of their time at school, and a measure of general intelligence was playing a role in their university prospects.

These practices are not unusual, CEM suggests that test results might be shared with students to 'help you motivate students' or as 'perfect for parents evening as it shows potential clearly with objective information' (https://www.cem.org/secondary-assessments). They claim that 1200 schools in the UK use CEM data, and that the data can be used when considering the following questions:

(i) What is this pupils' progress like in each subject? Is it about as expected, high, or low given their baseline data?
(ii) Why does this pupil behave and perform in the way that they do?
(iii) What kind of action or advice might be useful in helping to raise this pupil's attainment in my subject?
(iv) Should I request to alter the target grade in my subject for this pupil?
(v) Might this pupil have an underlying special educational need?
(vi) Is this pupil making sensible options choices? (CEM 2018)

While the testing is not as high stakes as a student's results in national examinations, it does play an underlying role in their experiences of education.

The use of intelligence style testing in the United States is more clearly visible in educational practices. Here, SAT, ACT and GRE tests provide measures of general ability closely akin to intelligence testing. These are used to determine who will be admitted into higher education institutions (Fletcher and Hattie 2011, 32). They are high stakes for students. Lovell and Mallinson describe these standardized tests as 'synonymous with contemporary college admissions' (2024, 178), despite some colleges dropping a requirement to submit testing scores in recent years.

One of the justifications offered for using intelligence testing to select students for higher education places is that it evens out some of the differences between different student groups in society: 'in recent decades, the notion of basing admissions on "color-blind" meritocratic standards such as standardized academic test scores has hardly been an uncontroversial position' (Unz 2012, 14). The idea here is that different students come from different socio-economic backgrounds, attend different schools, are taught different material, and have access to different levels of support. Their attainment levels are thus unlikely to be a good measure of their potential, so intelligence testing serves meritocratic purposes of selecting the best students for the opportunities available. Lovell and Mallinson refer to this as a 'leveling tool for applicants' (178).

Most students in British and American schools will have had their intelligence tested over the course of their time at school. These tests are likely to have been shared with them and used by their teachers to determine educational practices, at least to some extent. These uses of intelligence testing can be classified under two general headings: (1) support and (2) selection. Support refers to practices to provide appropriate resources and pedagogical approaches to different students to support their different needs. Selection refers to the ability to select the best students for higher education or vocational positions.

This paper argues that the use of intelligence testing in education is not justified by the purposes of either support or selection. This is because intelligence testing has the side

effect of simultaneously harming individuals and undermining social justice. I consider three alternative ways of understanding the concept of intelligence in educational discourse to see whether these ameliorate the issues. However, these face their own problems. I conclude that the concept of intelligence ought to be eliminated from educational discourse. Rather than abandoning the hope of being able to support and select students, I suggest that measures of competence are equally effective to this end and avoid some of the side effects associated with concepts of intelligence by focusing more on what an individual can do at a particular point in time, and less on judging their general character.

Conceptual engineering and identifying defective concepts

Part of what analytic philosophers regularly do involves clarifying the meanings of concepts; conceptual engineers go one step further and explicitly ask, in addition to whether concepts are clear, whether they serve their purposes well, and whether those purposes are justified. If they fall short of serving justified purposes well, they may be considered defective and in need of amelioration or elimination. This paper asks whether there is a concept of intelligence that serves justified educational purposes. I argue that there is not; that whichever way the concept of intelligence is understood, it does not support justified educational ends. This is because, regardless of their purported value, concepts of intelligence cause a variety of educational harms that could be ameliorated for by eliminating the concept of intelligence from educational discourse altogether.

To make these claims, I turn to a conceptual engineering methodology. Conceptual engineers are interested in '(i) The assessment of representational devices, (ii) reflections on and proposal for how to improve representational devices, and (iii) efforts to implement the proposed improvements' (Cappelen and Plunkett 2020, 3). Intelligence is one such representational device. Intelligence, as a concept, can be assessed in several ways. Traditional conceptual analysis assesses concepts on their coherence, clarity and how well they represent reality. Alongside this, conceptual engineers ask whether the concept serves a particular function well. This assessment of the role that concepts play in how we understand and shape the world around us is the specific concern of conceptual engineering.

Haslanger's seminal paper in conceptual engineering breaks down this work into three separate forms of inquiry. The first two forms of inquiry are traditional philosophical methods: first, a conceptual inquiry aims to clarify the ordinary meaning of a concept: 'one way to proceed would be to use the method of reflective equilibrium' (Haslanger 2000, 33). The second form of inquiry is descriptive; 'here, the task is to develop potentially more accurate concepts through careful consideration of the phenomena, usually relying on empirical or quasi-empirical methods' (33). The third sort of inquiry is what Haslanger calls 'analytical' or 'ameliorative:'

> On this approach the task is not to explicate our ordinary concepts; nor is it to investigate the kind that we may or may not be tracking with our everyday conceptual apparatus; instead we begin by considering more fully the pragmatics of our talk employing the terms in question.

> What is the point of having these concepts? What cognitive or practical task do they (or should they) enable us to accomplish? Are they effective tools to accomplish our (legitimate) purposes; if not, what concepts would serve these purposes better? (Haslanger, 2000, 33)

It is this third form of inquiry that conceptual engineers are interested in: whether a concept is an effective tool to accomplish legitimate purposes. When it comes to 'intelligence,' Haslanger prompts us to consider not only the clarity of the concept and its accuracy given what empirical sciences tell us, but also the value of that concept as a tool for bringing about normative ends.

What conceptual engineers mean by these normative ends can vary. For example, Rudolf Carnap, who is seen as a foundational thinker in conceptual engineering, assesses concepts based on how well they function in scientific theories. He says that a scientific concept is 'more fruitful,' or better, 'the more it can be used for the formulation of laws' (Carnap 1950, 6). Haslanger assesses concepts based on how well they function in the social world; 'the defects she finds have to do with social and political effects of the meanings' (Cappelen and Plunkett 2020, 6). In any case, the normative aims of the conceptual engineer need to be transparent to justify their claims about the value of a concept. Haslanger's work on the concepts of gender and race is premised on the idea that 'it is our responsibility to define gender and race for our theoretical purposes' (2000, 52); for Haslanger, these purposes are feminist and anti-racist. The question, then, is what concepts of gender and race best serve feminist and anti-racist purposes.

What theoretical purposes should educational concepts serve? Elsewhere, I argue that a good educational concept ought to, at the very least, be (i) good for the individual being educated, and/or (ii) good for society (Gatley 2022). While there are certainly more specific educational purposes, these two criteria serve as a basic test to see whether an educational concept is acceptable, or whether it is in need of revision or elimination. Perhaps a better way of phrasing the two criteria is that an educational concept is defective if it is (i) not good for the individual being educated or (ii) is not good for society as a whole. If the concept of intelligence turns out to harm individuals and harm society, then it is unlikely to be serving higher educational purposes such as flourishing or social justice.

Another way of thinking about this is to draw a parallel to Yong Zhao's call to fully consider the side effects of educational policies and practices. Zhao claims that 'educational programs, approaches, and policies are not unlike medical products: when they cure, they can hurt' (2017, 13). While Zhao is interested in policies and products, a parallel can be drawn to concepts- a concept that plays a central role in educational discourse may be functioning well, but at the same time it might be causing side effects that harm students or harm society. Zhao states that 'research on side effects can force product and policy developers to improve their products and policies so as to minimize side effects or to develop alternative products and policies that cause less damage' (14). The same can be said for educational concepts: where a concept is causing harm, we should attempt to improve it to minimize negative side effects. Where this is not possible, we should consider alternative concepts that cause less damage.

The question is not simply whether a concept of intelligence is useful for identifying students in need of support or selecting the best candidates for competitive opportunities. Instead, we need to ask whether the concept of intelligence, even where it functions effectively, is serving broader educational goals. Something is unlikely to be

educationally valuable if it harms rather than helps individual students. It is also potentially defective if it harms society, by for example hindering social justice.

The options for responding to defective concepts are: 'to do nothing, abandon them, improve them; or replace them' (Cappelen and Plunkett 2020, 3). This paper considers several proposed improvements or ameliorations to the concept of intelligence before arguing that the concept ought to be abandoned in educational discourse. In seeking to abandon, replace, or improve concepts, conceptual engineers are not in the business of radically revising our vision of society, or in this case education. Rather, the task is to tinker with existing conceptual frameworks to better suit specified normative ends.

General and educational concepts of intelligence

According to conceptual engineers, concepts should be judged on how well they function. Concepts of intelligence have a range of different functions in different domains. For example, different animals can be assessed in terms of their relative intelligences. Rightly or wrongly, the idea that chimpanzees are more intelligent than cows underlies a general willingness to eat a cow but not to eat a chimpanzee. This, however, is not an educational function. It is not used in, nor tailored to be used in educational discourse.

Other functions of the concept of intelligence include its use to track intellectual development with the aim of providing appropriate support to those who need it. This has some overlap with educational discourse, particularly around additional learning needs and specialist schools, but it is primarily about identifying support to help people to live flourishing lives in a more general, rather than educational sense. Employers use concepts of intelligence to select their employees. Psychometric tests can provide a direct measure of what they are looking for in a person. The concept of intelligence, as it is used by employers, impacts on educational issues insofar as schools and universities prepare their students for the world of work, and exam results affect students' employment prospects, but the function of the concept in this context is primarily vocational rather than educational. Concepts of intelligence have historically been used in a range of more nefarious ways, from claims about the relative intelligences of men and women, to the role of the concept of intelligence in the eugenics movement. Despite overlap and influence, once again, these functions are not primarily educational. The primary roles they play are within other arenas.

There are, of course, many primarily educational roles for the concept of intelligence. These include admission tests for selective schools such as grammar schools in the UK; differentiation of resources in classrooms by teachers so that more intelligent students are given more difficult tasks; university admission standards so that students are well suited to the courses they are hoping to take; monitoring and testing to work out who to provide extra support to in schools; labelling a student 'intelligent' as a reward term to encourage them; tests to determine a child's predicted performance in exams; tests to assess how much 'value added' schools are providing their students; and in the US, using intelligence testing for admission to universities with the aim of promoting meritocracy and levelling injustices related to socio-economic status or the quality of schooling by selecting students based on their intelligence rather than their educational experiences.

As suggested earlier, these educational functions of intelligence can be summarised as (1) selection, and (2) support. This paper is specifically concerned with the concept of intelligence where it plays a role in education. In arguing that the concept of intelligence ought to be eliminated from educational discourse, I am not making any claims about the concept of intelligence as it is employed elsewhere for non-educational purposes.

IQ and psychological concepts of intelligence

The first and most prevalent concept of intelligence used in education is the psychological notion of IQ. Castles claims that 'in the eyes of most modern Americans, intelligence is IQ' (2012, 2). This is a psychological measure of general intelligence, or intelligence quotient (IQ). A range of technical definitions are provided by the field of psychology, where someone is labelled intelligent if they score above a particular measure in an intelligence test. It is the psychological concept of IQ that plays the role described in this paper's introduction in schools in the United States and United Kingdom

Psychological concepts of intelligence are defined by intelligence testing and statistical analyses. Hand describes psychologists as 'less interested in clarifying the concept of intelligence than in adapting it to their theoretical purposes' (2007, 36). These theoretical purposes include the educational functions of identifying children who might need extra support in schools, predicting exam results, measuring the 'value added' by a school, differentiation of activities and resources by teachers, selective school admissions, and tests for university entrance.

Psychological concepts of intelligence are influential. In the United States, SAT tests provide a measure of general ability closely akin to intelligence testing. In the United Kingdom, schools can have their students' vocabulary, maths and non-verbal skills tested to predict their exam results based on their general intelligence (e.g. Alis and MidYIS testing). These general ability tests are also used to calculate whether schools are 'adding value,' *ie* are their students performing better than predicted by their intelligence test results?

These concepts are meant to provide a general measure of intelligence, to accurately predict somebody's ability across a broad range of different areas. An intelligent person ought to be able to read, write and do arithmetic easily. On the psychological definition, intelligence is also understood as inherited and stable. Intelligence is a characteristic that tells us something important about a person's abilities, chances of success, and potential value to society. We all want intelligent politicians, doctors and lawyers, so intelligence tests are often used as gatekeepers for these, and other, competitive opportunities.

Psychological concepts of intelligence support the full range of its educational functions. IQ testing, or a close analogue, is used for selection for competitive school or university places. Differentiation of resources in schools sometimes uses 'baseline' tests which measure general ability, an analogue of intelligence. Extra support in schools can be based on IQ type testing. Predicted performance in exams often rests on IQ testing. IQ testing can be the basis of a case for selection based on merit rather than circumstance as it is purported to do by some US proponents of SAT testing.

Psychological concepts of intelligence, or IQ, are functional and frequently used in educational settings. In the next section, I explain why this functionality and frequent use

in education is more of a problem than an advantage given the harm the concept inflicts on individuals and society.

Assessing the concept behind IQ

The functions of the educational concept of intelligence are to aid (1) selection and (2) provide support. A good educational concept neither (i) causes harm to individual students nor (ii) causes harm to society. These considerations can be used to assess concepts of intelligence by asking whether they are effective in playing these roles, and then whether they come with associated harms to individuals or society. If the concept is causing harm, then it is worth trying to ameliorate for this harm. In this section, I evaluate psychological concepts intelligence against these functions and criteria to determine whether psychological concepts of intelligence are good educational concepts.

Psychological concepts of intelligence are frequently used for both educational functions: selection and support. Unfortunately, biases inherent in different measures of IQ make these functions pernicious rather than valuable, causing harm to both individuals and society along the way. While biases can be ameliorated, by its nature a concept that lauds some people's innate and fixed characteristics and selects them for opportunities, is always going to, as a side effect, denigrate somebody else's innate characteristics and bar them from opportunities. I argue that this ought not to be done based on a measure of IQ, but rather, if it is indeed necessary, it ought to take into account a greater range of personal attributes.

The history of IQ testing shows its potential to harm individuals and harm society. In the United States, Henry Goddard used intelligence testing to declare that 3% of the population was 'feebleminded.' Goddard then 'espoused views that children with such classifications should be segregated from society and even sterilised to prevent them from breeding' (Fletcher and Hattie 2011, 19). Furthermore, 'such was the concern that 33 states in the United States of America passed laws permitting the sterilisation of "feebleminded" individuals, and more than 60,000 men and women housed in mental institutions were sterilised, with many not knowing what was happening to them' (19). Intelligence testing and some technical concepts of intelligence have roots in eugenics movements, clearly harmful to individuals and society.

John White provides a similar account of intelligence testing in the United Kingdom. Here, Francis Galton argued for 'breeding not only for intellectual ability but also for moral character' (White 2006, 18). White explains that Galton wanted to both 'improve the stock of those most naturally gifted' and 'diminish the numbers of the less endowed to the point of elimination' (20). Furthermore, Galton claimed that the British and other Northern Europeans were 'at the pinnacle of human development' (21). The belief that people have an inherited general intelligence that is measurable can be used to shape society in a variety of ways, including through eugenics.

While IQ is no longer actively associated with eugenics, the same assumptions underly IQ testing for admissions and selection purposes. White notes Galton's influence on the introduction of selective education in the UK: '[Cyril] Burt's Galtonian theory of intellectual ceilings helped to ensure that pupils were not placed in tracks, and later schools, which were beyond their capacities, thus degrading the quality of work at that level' (21). Even

today, in some counties in the UK, selection tests for selective schools are sat at age 11, an age when children are still developing. They do not take into account personal circumstance, family support, how much money was spent preparing them for the test, or how well a child is feeling on the day. Testing a child's potential at the age of 11 assumes that there is a fixed characteristic of general intelligence that is salient to the opportunities they should be offered. It is not hard to see how IQ testing can be harmful to some students – namely, those who do not pass selection tests.

Another use of IQ testing in schools is to provide targeted support to students. In the UK, many schools test their students' intelligence. Results can be used for streaming students into ability sorted groups, helping students to choose which subjects to take, working out how well the school is performing, and predicting end of school exam results to help make university choices. These test scores can be shared with students with the aim of motivating them. While good scores might motivate students and demonstrate potential, many students will receive poor scores. As Castles points out, 'you don't need to be a rocket scientist to understand that not being smart is a pretty bad thing … My clients made it very clear to me that this label was devastating to their self-esteem' (2012, 4). Again, while some students will be unaffected or benefit from good scores, many will be harmed by poor scores.

Furthermore, IQ testing may not provide a good measure for which students need more support and why. In an overview of the history of using IQ in Swedish schools, Hamre, Axelsson, and Ludvigsen (2019) track the move from using IQ to determine which students needed remedial support, to finding that 'IQ testing was not enough to determine whether a child was "slow," "impossible," "badly behaved," or would benefit from remedial classes … one had to analyse carefully each case to uncover the circumstances affecting the child's difficulties in school' (401). Instead, 'professional attention increasingly turned … towards the context of upbringing in the family, local community, and educational institutions' (404). Over-reliance on intelligence testing can be reductive and blind educators to the complicated set of obstacles that individual learners may be facing.

Thirdly, some claim that the function of selection played by IQ testing supports a meritocratic society (e.g. Unz, 2012). SAT tests are used for university admissions in the US because they purport to counter the influence of family, socio-economic circumstance and the quality of schooling of students. Instead, students' potential is being tested for. However, IQ testing disguises but does not eliminate the effects of these influences on university admissions. In a report from North Carolina, race and SAT scores are seen to go hand in hand:

> Race/ethnicity remains a significant and substantial predictor for all student groups of color except Pacific Islanders, even after accounting for other factors. Asians were predicted to score 72 points higher than Whites while Black students were predicted to score 104 points lower than Whites net of other factors in the model. Being Black was the strongest predictor of SAT score outside of giftedness (Tripplett and Ford 2019, 64).

One simple reason may be that the design of intelligence tests itself favours some over others. Neisser et al. describe a 1979 study by Serpell that showed that intelligence tests conducted using pen and paper favoured English children used to working with pen and paper over Zambian children. The same test conducted using wire favoured Zambian

children who were used to working with wire, and a test using clay tested both equally, since neither was familiar with clay (1996, 80). On top of this, a host of socio-economic and cultural factors play a role. While IQ testing purports to present a scientific and neutral assessment of somebody's abilities, in reality it tracks a host of social circumstances.

IQ testing can make society more unequal, or at the very least, less transparent in its injustices. As Castles puts it,

> perhaps most corrosive to our social fabric is the way in which our overvaluation of intelligence has perpetuated racial and economic inequalities. Judging on the basis of cognitive potential, we grant some people access to privilege while shunting others into dead-end positions (2012, 11).

The scientific presentation of IQ tests can mask their inbuilt biases with a veneer of objectivity. Since intelligence is used to select students for desirable opportunities, to motivate school children, and to judge the effectiveness of schools, disparities caused by testing have a significant impact on individuals' lives, and on the fairness of the societies we live in. It is hard to imagine a psychological concept of intelligence that, when applied to education, does not divide people in a way that causes harm to some individuals or skews society to favour certain socio-economic groups.

So while IQ testing can be used in selection and support, it is unwise to rely on it to do these things. Selection using IQ tests, or an analogue, is imperfect, and even if it did work perfectly it is still harmful to the self-esteem of those who do not pass selection tests. In the case of IQ testing to identify those who needs extra support, the label of 'unintelligent' may cause more harm than the benefits of a diagnosis of additional learning needs. A more holistic judgement from people who know a child would be more suitable, and less reliant on the concept of intelligence. In any case, the need for support is not always linked to intelligence. Dyslexia and intelligence are not correlated (Tanaka et al. 2011), but dyslexic children benefit from extra support in schools. Finally, the idea that selection using IQ testing levels out irrelevant differences between people is likely to be false. While IQ testing can even out some differences between people, it highlights others. It is also worth considering whether the quality of somebody's education, how hard they worked, or other personal characteristics that contribute to school attainment should be dismissed in favour of intelligence. These are valuable too. A hardworking and less intelligent doctor is preferable to a more intelligent lazy one.

Psychological concepts of intelligence are problematic because they both (i) cause harm to individual students and (ii) cause harm to society by exacerbating hidden injustices. Furthermore, they do not wholly function as they purport to. They do not accurately identify students who needs support, and they tend to select candidates for further opportunities based on socio-economic advantage, despite purporting to avoid this. This means that on balance, psychological measures of IQ, as they currently stand, should not play these roles in education; and IQ is not a good educational concept because it comes with harmful side effects.

The ordinary concept of intelligence

One possible amelioration of psychological concepts of intelligence in schools is to turn to an ordinary concept of intelligence. Michael Hand suggests 'that to be

intelligent is to have an aptitude for theory-intensive activities' (35). Someone who has an aptitude for theory-intensive activities is ordinarily considered intelligent, whereas someone who does not, is ordinarily considered unintelligent. Someone with an aptitude for theoretical activities need not be good at them already (this would be a competence), but will pick them up easily when taught. This is important because we would not want to call someone who had never tried their hand at theoretical activities unintelligent, and someone who had worked very hard to master them intelligent. Perhaps, the first person would pick them up very quickly, whereas the second person would take a long time. Hand would say that the quick learner is intelligent and the slow learner less so.

Hand lists theoretical activities as: 'plans, plots, strategies, schemes, programmes; procedures, protocols, methods, algorithms; policies, principles, ideals, rules, norms; justifications, reasons, arguments, rationales, rationalizations, excuses; accounts, descriptions, interpretations, analyses, taxonomies; narratives, histories, biographies, stories, anecdotes; explanations, hypotheses, theorems, proofs, syllogisms, equations' (42). He notes that intelligence tests cannot possibly be testing people's aptitudes for theory-intensive activities because intelligence tests test what people can already do their competence. Aptitude 'can only be assessed by monitoring a person's learning over a period of time' (41).

He then addresses how intelligence should be used in schools. He starts by providing some context:

> To have attended school, as either pupil or teacher, is to have observed at close quarters large numbers of pupils attempting to master a wide range of activities. What anyone who has made such observations can hardly fail to notice is that, in addition to the pupils who display specific talents for one or two activities, there are also pupils who display talents of a more general kind, talents for groups of activities with salient features in common (44).

These are intelligent students according to Hand's ordinary concept. Hand sees this as evidence that his ordinary concept is use-able. He argues that this ordinary concept of intelligence is useful in schools because it helps teachers to plan and pace their teaching (44) and identify abnormal successes and failures in their students (45). The ordinary concept of intelligence can help teachers to become more effective practitioners.

Hand's concept of intelligence is more limited in its scope than psychological measures of intelligence. It focuses on how teachers support their students in the classroom. Unlike IQ, this ordinary concept of intelligence has fewer societal potential side effects. The scientific language of eugenics is countered by turning to an ordinary understanding of cognitive differences between people. The lack of testing makes this a softer measure, with a child's intelligence more open to interpretation and revision. Hand's concept is not meant to be used to select students for competitive opportunities. It is just meant to support teachers in their teaching. Nonetheless, this can still harm individual students.

The main problem with Hand's ordinary concept is that it is open to teacher bias. We have already seen that psychological measures of IQ, despite attempting to be objective, tend to reflect biases and judge certain social groups as less intelligent. Turning to teachers' judgements instead of IQ testing is unlikely to ameliorate for this. Each individual teacher is likely to have their own prejudices and biases which will be reflected in how intelligent they judge their students to

be. Since being treated as intelligent by a teacher is generally good for a student, and being treated as unintelligent is bad for a student, the ordinary concept of intelligence is just as harmful as the psychological one when it comes to how students are treated in schools. Students would be better off if it was not used. This means that despite offering an improvement on psychological concepts of intelligence, Hand's proposal that we turn to an ordinary concept of intelligence still runs into problems.

Multiple intelligences

Another approach to ameliorating the psychological concept of intelligence is to turn to multiple intelligences. Howard Gardner, who pioneered this idea, explains:

> I believe that it is the standard definition of intelligence that narrowly constricts our view, treating a certain form of scholastic performance as if it encompassed the range of human capacities and leading to disdain for those who happen not to be psychometrically bright. Moreover, I reject the distinction between talent and intelligence; in my view, what we call 'intelligence' in the vernacular is simply a certain set of 'talents' in the linguistic and/or logical-mathematical spheres (1995, 103).

Gardner thinks that concepts of general intelligence like those presented by Hand and tested for in intelligence tests are too narrow. Instead, he describes seven different intelligences: linguistic, musical, logical-mathematical, spatial, bodily-kinaesthetic, and personal intelligence (Gardner 1984).

On the face of it, it seems that multiple intelligences are kinder to children being educated. There is less scope to label somebody wholesale unintelligent, and their particular talents and abilities can be recognised and affirmed. Since the label of 'intelligence' acts as a form of praise, this seems important. However, we need to scrutinise whether it is really the amelioration of the concept of intelligence that it seems to be.

Gardner's multiple intelligences: linguistic, musical, logical-mathematical, spatial, bodily-kinaesthetic, and personal, have been found to be closely correlated with general intelligence. This is particularly true of linguistic, logical-mathematical, spatial, and personal intelligences (Visser, Ashton, and Vernon 2006). Visser, Ashton & Vernon conclude that Gardner's multiple intelligences theory does not tell us anything new about a child's intelligence. If they have linguistic intelligence, we can take it to mean that they are in fact generally intelligence and have a high IQ across the board. The exception is bodily kinaesthetic and musical intelligence, which they argue would better be termed talents. In their opinion, 'multiple Intelligences theory does not provide any new information beyond that already contributed by hierarchical models of ability and should not be considered a basis for classroom planning' (2006, 501).

This means that multiple intelligences are not kinder than IQ measures. A child is likely to be found intelligent across multiple domains or unintelligent across multiple domains. Given that most schools, exams, universities and employers place less value on musical and bodily-kinaesthetic talents, children labelled intelligent in these and unintelligent in the other domains are likely to realise that they are seen as inferior to their peers. In schools in the United Kingdom, where streaming students into sets according to ability is a mainstream practice, students in the top set for one subject are often in top sets across

the board, and the same for students in bottom sets. It might be theoretically possible to be intelligent in only one domain, but in practice, it seems that this is not the case. Multiple intelligences do not prevent the harms to individuals that IQ testing, they just add more labels to the same concept.

Furthermore, it is unlikely that Multiple Intelligences ameliorate for the broader, social harms associated with IQ. Biases in how an intelligence is perceived, measured or attributed are not ameliorated by declaring there are multiple intelligences rather than a single measure. For example, it is already a common stereotype that women have higher interpersonal intelligence than men. This is linked to women taking up roles in caring professions such as teaching and nursing. The stereotype that men are better at maths and science has led to their over representation in STEM subjects. While Multiple Intelligences might lead to finer grained bias and stereotyping than IQ, this is no less influential in society and no less responsible for embedding injustices into existing systems.

Turning to multiple intelligences does not ameliorate the problems faced by other concepts of intelligence. It continues to perpetuate individual and societal harm.

Malabou and intelligence as a process

Catherine Malabou suggests a third alternative amelioration for the concept of intelligence. After tracking its nefarious history, she proposes that the defect lies in the idea that intelligence is innate and fixed. Malabou holds that the brain is not fixed, but rather plastic. She turns to research into epigenetics to demonstrate that psychological traits are not fixed by our genetics but can alter and change (2019, 11). Her suggestion is that we can keep a psychological concept of intelligence by ameliorating it so that it is no longer linked to the idea of a fixed measure of a single person, 'allowing the concept of intelligence to be extracted from the innatist, preformationist, or genetic ore in which it lies' (2019, 15).

Malabou turns to the work of Dewey and Piaget to explicate her concept of intelligence. She claims that both Dewey and Piaget see intelligence as a process. For Piaget, it is the end goal of development, and for Dewey it is a method or habit of inquiry and problem solving. Since both development and inquiry are life-long activities, it does not make sense to think about intelligence as innate or fixed. Furthermore, Malabou adopts Dewey's view that intelligence is a feature of a community rather than an individual. She states that 'ultimately, there is nothing but collective intelligence. It is therefore impossible ever to reduce it to an individual gift' (2019, 13). On this view, the educational function of the concept of intelligence is to provide a horizon to aim towards. This horizon is of an intelligent community, able to solve problems collectively. Schools are tasked with educating in such a way that communities will become more intelligent.

This is a radical revision to the concept of intelligence, and departs significantly from preceding psychological concepts of intelligence that have served the educational roles of supporting and selecting students. According to Malabou, intelligence is not fixed and is better conceived as a communal rather than individual trait. This means that individuals should not be tested or judged in terms of how intelligent they are. Individuals could be judged on how well they contribute to communal problem solving, or on their level of development as per Piaget, but this would be beside the point on Malabou's account.

There is little value in judging individuals' intelligences if intelligence is a collective measure. As a result, Malabou's concept of intelligence is not well adapted to providing judgements about how much support individuals need, or who should be selected for limited opportunities such as university admission. Her concept of intelligence is not tailored for these educational purposes. This could be seen as an advantage, but support and selection do not seem in themselves to be problematic. Identifying students who would benefit from additional support seems like a core part of a teacher's job. Selecting students for competitive opportunities, if done fairly, responds to unavoidable bottlenecks in the non-ideal society we live in, and is better than alternatives such as relying on a rigid class system or inherited elite positions in society.

While Malabou does ameliorate for the harms associated with defective measures of intelligence, a degree of functionality is lost. It is valuable to be able to identify students who would benefit from extra support. It is valuable to be able select the best students to access competitive opportunities. Rather than radically change the meaning of the concept of intelligence in this way, I suggest acknowledging that there is such a concept, but eliminating it from educational discourse because of the harms associated with it.

Education without intelligence

What is left is the suggestion that we should abandon the concept of intelligence in education altogether. It might seem absurd to try to prevent teachers from labelling their students as 'gifted,' 'intelligent,' 'bright,' or some other similar term. These are praise words, and good for the students being praised. However, it is worth reflecting on the fact that these words are contrasted with 'stupid' 'thick' and 'unintelligent.' This group of words has been successfully eliminated from educational discourse; it is frowned upon to call a student stupid, thick or unintelligent.

On the other hand, I have also pointed out that the functions of the concept of intelligence to support and select students are valuable. If eliminating the concept of intelligence takes away the ability to select and support students, then perhaps using the concept of intelligence in schools is too valuable to be sacrificed.

This leads to a final suggestion: the concept of intelligence is redundant in education. Every valuable function that it plays could be replaced by a measure of how good a student is at something.

Gilbert Ryle's work on the concept of intelligence takes this approach, and he equates intelligence with something more akin to competence (Hand 2007). Ryle claims that conceptualising intelligence in terms of theorising is excessively narrow and intellectualist. He gives an account of intelligence where one can intelligently *do* activities such as boxing, surgery, poetry, selling goods and playing chess. The intelligence of performing these activities does not lie in some prior theorising, but in their competent performance. Ryle explains that

> whether or not the boxer plans his manoeuvres before executing them, his cleverness at boxing is decided in the light of how he fights … Cleverness at fighting is exhibited in the giving and parrying of blows, not in the acceptance or rejection of propositions about blows (1949, 36).

According to Ryle, someone is intelligent at something if they are good at it. This is quite different from the general aptitude measured by IQ testing, or the ordinary concept of intelligence that seeks to mark out general ability. Instead, Ryle seems to be simply talking about competence or how good someone is at something at a particular time.

Hand claims that Ryle's concept of intelligence 'will not do' (2007, 37). He elaborates that it strays too far from the ordinary concept, such that 'it is simply not true that "is intelligent" can usually be construed as an abbreviation of "is intelligent at such- and-such an activity." When I describe my daughter, my pupil or the hero of my novel as intelligent, I need not, and normally do not, have a particular activity or domain of action in mind. If you were to ask me to identify such an activity, I should be inclined to think that you had misunderstood me' (38). However, there is no need to equate 'competence' with 'intelligence.' A better move is to adapt what Ryle says as making a claim about the relative value of general intelligence *versus* competence.

Ryle's work on the concept of intelligence highlights the idea that it is not underlying general ability that matters, but how good someone is at a particular thing at a particular time. Rather than changing the concept of intelligence into competence as Ryle suggests, we can instead turn to a concept of competence, as opposed to intelligence, to perform the educational functions we had been relying on intelligence for. Selection for competitive opportunities could be based on how good someone is at the thing they were being selected to do; support in the classroom could be based on how good someone is at the task they might need support with.

Of course, sometimes we do not know how good someone might become at something, but that is one of the things that education is for. When a student wants to apply to study medicine at university, they choose to study subjects that give some idea of how good they will be at medicine while they are in school. They then sit exams in those subjects, and universities look at those exam results and make a judgement about how well suited that student might be for the course they want to take. Relying on intelligence, on the other hand, is at odds with this approach to education. If someone's IQ results are what determine the opportunities available to them, and IQ is inherited and stable, then there is little that schools can do to support their students. At the end of the day, their IQ is not going to change much as a result of standard educational practices. It seems that education can get by without the concept of intelligence and that in reality, educational practices are focused on competence and have never been primarily about IQ.

The practical benefits of turning to competence rather than intelligence are subtle but valuable. Compare a conversation with a student who wanted to study medicine at a competitive university but was not predicted high grades according to intelligence tests, with a conversation with the same student who had performed poorly on a science test that was clearly linked to competencies needed for the medicine course. The first conversation would involve telling the student that they were the wrong sort of candidate, that they were likely to fail given their underlying abilities, and that they should be more modest in their aspirations. The second conversation would involve talking about why the student did poorly in the test, analysing what their performance might mean for their aspirations, and identifying further support, or suggesting alternative courses to apply to. The second conversation is less reductive, more holistic, and leaves more options open than the first. Using competence in place of intelligence is thus ameliorative.

Conclusion

An educational concept is defective if it is (i) not good for the individual being educated, or (ii) is not good for society as a whole. The psychological concept of intelligence is bad for individuals because it closes off opportunities and damages the self-esteem of those who score below average results, and because socio-economic factors determine how well somebody performs in IQ testing, making the results unfair. IQ testing is bad for society because it exacerbates existing injustices through biased testing. Furthermore, historically, IQ testing has been used to deliberately harm subsections of society, so these are not purely theoretical concerns.

Turning back to the example I started with, of schools using baseline testing to provide students with target grades, this is bad for some individual students because those with low targets are being told they are unintelligent, will perform badly in their exams and will be denied a place at top universities. They may also be streamed into lower sets, which is likely to be disadvantageous for them. The practice is also bad for society because students with advantaged socio-economic backgrounds will be more likely to have higher target grades, more motivated to do well at school, and look better on paper to universities selecting them. A society that selects candidates for important positions on irrelevant factors such as socio-economic background is less just, but also less well organised than one which selects on more relevant factors. In this example, the concept of IQ falls short of effectively fulfilling its educational functions and is also associated with harmful side effects.

There are two ways to deal with defective concepts; they can either be ameliorated or eliminated. I looked at three attempts at ameliorating the psychological concept of IQ. The first, Hand's ordinary concept of 'intelligence' as a general aptitude for theorising, does not attempt to play a role in selection. Instead, it is narrowly focused on classroom practice. Still, it opens the concept of intelligence up to individual teachers' judgements, and these may be just as rife with prejudice, or even more so, than IQ testing. Thus, an ordinary concept of intelligence, while still functional in education, is also still harmful.

Next, I looked at the idea of multiple intelligences, which attempt to ameliorate some of the harm to individuals by allowing for more different ways of being labelled intelligent. I argue that multiple intelligences are still linked to general IQ and so are simply making the same judgement made by other psychological measures of IQ, with the same harm to individuals and the same harm to society.

I then explored Catherine Malabou's suggestion that the problem with the concept of intelligence is that it suggests intelligence is a fixed, innate, individual trait. Her concept of a malleable, communal concept of intelligence ameliorates the harms associated with previous concepts, but at the same time loses functionality. Her concept is not well suited to identifying students in need of additional support or selecting the best students for competitive opportunities. Furthermore, in departing quite drastically from the ordinary concept of intelligence, Malabou closes off avenues for discussing differences in general abilities. For example, on Malabou's definition, we could not meaningfully discuss whether a chimpanzee or a cow was more intelligent.

At this point, all three attempts to ameliorate the concept of intelligence seem suboptimal. I then consider the disadvantages of abandoning the concept in educational discourse. Here, I argue that the functions played by 'intelligence'

can just as well be played by asking how good someone is at something by looking at competence. This is a better fit for the practice of educating, where students are supported to improve and learn- to become more competent. Intelligence, on the other hand, if it is assumed to be fixed, innate and inherited, leaves little for the educator to do to improve somebody's chances in life. Malabou's alternative would solve the same problem but does not have the same functionality as competence, which can be easily measured and taught for.

In conclusion, there is a good case for suggesting that educators ought to treat the word intelligence much like the word 'stupid' and avoid using it or testing for it in school settings. Little functionality would be lost, and plenty of potential harms might be avoided. Since both ordinary and common psychological concepts of intelligence are linked with harms to both society and individuals, there is a normative case for abandoning intelligence in educational discourse. While implementing this change wholesale through policy would be heavy handed considering the pervasiveness of the concept of intelligence in everyday life, drawing attention to the harms it can cause is an important nudge to help educators to improve their concept use.

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