



PSRP REVIEW SUB-REPORT:

**Review of the effectiveness and efficiency
of psychometric assessments
in REAP's Post-School Readiness Programme**

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THE BRIEF

This report fulfils a brief given to a commissioned researcher to undertake desktop research and key informant interviews to **review the use of psychometric assessments** being employed in our Post-School Readiness Programme which is being implemented in in five schools in the Northern Cape – and to propose other options as useful.

The proposed method was:

1. Supplement the existing service provider's description of the psychometric assessment process to date with interviews with REAP staff members regarding the implementation processes to date. Compile a full description of process offered so far.
- 2.1 Undertake an internet search regarding the value etc of psychometric testing for career & study choices – and to identify other options.
- 2.2 Participate in
 - the conceptualisation of the types of indicators / questions that might assess effectiveness and similarly efficiency; and
 - developing interview schedules and identifying a minimum of 8 key informants to be interviewed
- 3.1 Interview key informants (virtually) about the value etc of psychometric testing for career & study choices – and to identify other options.
- 3.2 Write up findings – giving opinions of tailored assessments (for 2023 should REAP proceed with this method?).
4. Write composite report of Findings from 1-3 above.

SUMMARY OF FINDINGS

- In 2020 and 2021, **REAP implemented psychometric testing** provided by Objectiva and then by a staff member who is a counselling psychologist and psychometrist.
- Assessment results were used holistically alongside biographical information and schools results to present options for learners.
- As feedback mechanisms were not optimal, however, if psychometric assessment continues to be included, it would be important for REAP to improve these and to further train those responsible for providing feedback.
- **Psychometric tests can be beneficial** in terms of
 - building self-awareness, providing ideas about possibilities, and fostering motivation to pursue goals;
 - uncovering underlying potential;
 - relative efficiency in terms of time and resources (able to gather a large amount of information that would take months through verbal interactions);
 - finding the 'right fit' in terms of work/career options which may have beneficial results later in life; and
 - being 'tried and tested', reliable.
- **Psychometric tests may not be beneficial** because
 - they may be outdated and inaccurate, and not sensitive to cultural and social realities;
 - they can suggest options that don't match with learners' interests and box them into study and work/career options that are not interesting to them;
 - the 'expert bias' or perception that the test gives 'the right' answer can also box learners into options that are not interesting to them;
 - they can promote linear, fixed thinking in terms of study and work/career options;
 - the results are not necessarily accurate or appropriate where the value of giving honest answers is not made clear to learners, or they are too young to have yet developed self-awareness;
 - jargon and language used in the tests and feedback can be alienating;
 - licensed psychometric tests require professional administration, fees and parental consent which can be a burden.

- **Best practice** for psychometric tests includes
 - good preparation of learners taking the tests,
 - good feedback, preferably from an expert who is contextually knowledgeable and can draw on other information in order to provide good interpretation of results and feedback to learners; and
 - feedback which emphasises that these options are for exploration and might shift and change along the way, including being affected by the PSET options available.
- In looking at a comprehensive engagement with learners, elements of psychometric tests may be useful, but only as **part of broader interventions** that take some of the 'best practice' ideas into account.
 (One potential model for an holistic intervention is DOTS which entails building decision making skills, looking at information about opportunities, building skills around transitioning, and building self-awareness.)
- **Complementary ideas for thinking** about PSET study and careers suggested by literature and key informants include the following:
 - **Good, clear and comprehensive information** that encompasses a range of PSET options.
 - **Group-based interventions** using some form of quiz that builds self-awareness and links this to **broad career fields (not job titles)** as potential options.
 - Learning activities geared **toward building self-awareness and skills** such as organising events, leadership camps.
 - Exercises to **build self-awareness** - such as tracking the things people are drawn to, or are strengths or weaknesses - to see what kinds of pattern emerge; then engage with someone knowledgeable about what **options these suggest**.
 - **Career exposure and role-modelling** – providing access to older people who learners can identify with (ideally from the same community) who have a variety of careers, and who are open about their backgrounds, pathways and how they ended up where they are.
 - Promoting **planning for contingencies** and being clear on a primary goal, while also building in options and ideas about different ways to achieve that goal, with a strong sense that learners can pursue other options as they arise.
 - A programme built by engaging in **learning partnerships** with other organisations, and partnerships with schools.

INTRODUCTION & METHODOLOGY

Since 2020, REAP has been using various forms of psychometric testing with learners in the five schools in the Northern Cape and Free State in which they work. The aim has been to assist learners to make appropriate choices about post-school education, training, and work through the provision of information and promotion of self-knowledge. The first section of the report details what has been done in the Northern Cape schools to date, lessons learned and the adaptations that REAP has already made, to ensure that the process benefits learners.

REAP staff, professionals and organisations who work in the field of career guidance for school learners were interviewed (see Appendix A for list of interviewees) and academic and grey literature was consulted (see reference list) – in order to explore the question of whether psychometric tests are effective and efficient tools for REAP to be using to assist learners with career and study choices, and what other options there may be.

In the process of identifying key informants, there was a wider consultation with people who work in the field of learner assistance programmes – especially those who offer after-school tutoring in order to foster a better range of post-school education and training access. The Learning Trust, a body that works to support and monitor these kinds of programmes, has very few partners who do consistent career guidance work, and identified only two that may be useful for this research – Gradesmatch and Young Aspiring Thinkers (YAT):

'Not many organisations are using psychometric testing or providing career guidance in a structured way. Unfortunately this is a gap, and I would be keen to hear what you find as models of best practice as I think the After School sector could really benefit from such findings and the rollout of effective models.'

Gradesmatch and Yenza emerged as providing the only formal tools to which many organisations working with young people in this manner have access. Otherwise, organisations rely on social networks, experience, and intuition. Most organisations are interested in finding out about more options and alternatives (Zukile, Ashleigh, Cindy).

Following a review of this research, REAP's Emma Francis and lead researcher Penny Morrell developed conclusions and recommendations, included at the end of the report. This was not part of the researcher's task.

REAP: PSYCHOMETRIC TESTING PROCESS TO DATE

2020 PROCESS

Timing and attendance

In 2020 REAP commissioned Objectiva to offer a series of psychometric assessments to learners in the three partner high schools in the Northern Cape.

There were a number of delays in implementing this, however - being COVID lockdowns which delayed access to learners and late confirmation of funding. The MOU with Peace Humansrus Trust was only signed on 10 November once Grade 12s were already out of school and preparing for their final examinations. This meant that the PSRP workshop sessions and the psychometric testing were offered much later than planned – namely from 11 to 16 December, immediately after the final matric examinations.

To participate in the PSRP, Grade 12 learners were required to submit parental consent and sign-up forms. Despite initial interest, there was ultimately a big difference between those who signed up¹ and those who actually turned up for the workshop sessions and to be assessed. Participation may have been undermined by two factors: REAP's dates (11-13 December and 14-16 December) ended up conflicting with the rewriting of an exam on 14 and 15 December (following irregularities); and end-of-school parties distracted some learners. When REAP contacted the missing learners to ascertain their whereabouts, some learners were drunk or still asleep.

Table 1: Number of grade 12 learners assessed in 2020

School name	Number of learners
Kuilsville High School	21
Danielskuil High School	7
Blinkklip High School	13
Ratang Thuto High School	23
Postmasburg High School	2
TOTAL	= 66

¹ A total of 129 students applied for the programme, of which:

- 48 attended the full 3-day of the programme,
- 14 attended 2 days of the programme
- 17 attended 1 day of the programme.
- 50 did not attend at all. (March 21 – Board prog report)

The timing also meant it was too late to assist learners with PSET and NSFAS applications – or to guide their choice of courses. It is clear that timing is very important and REAP is considering the best time of year, and best grade, in which to administer this kind of assessment.

The assessments

In this first year of implementing the PSRP, Objectiva administered and analysed a combination of three different tests – aptitude, personality, and interest assessments.

Aptitude Assessment	Differential Aptitude Test – Form S (DAT-S)
Personality Assessment	Jung Personality Questionnaire (JPQ)
Interest Assessment	South-African Vocational Interest Inventory (SAVII)

They started the process with an **intake form** which concentrated on biographical and life history details. They regard this as a best practice approach, as it ensures that learners are comfortable with the process and gives them a chance to write things down that they already know. While there is no official guideline or evidence to support this approach, Objectiva finds this useful in foregrounding the humanity of learners; it also provided additional information that assists in their assessment and feedback:

‘Only focusing on personality interests and career readiness without their life history would be a loss’ (Bryan, Objectiva).

The aptitude assessment was the least useful and took the longest to administer (4-5 hours). The information available from the test – e.g. mathematical skills - is also reflected in the learners’ school reports. If there was a need to validate learners’ strengths in particular areas, this test would continue to be relevant, but the aim of the assessment was stated as career guidance. This was replaced in 2021 (in the Free State) with a career maturity assessment. And although the **personality and interest assessments** remained in place in 2021, a more narrative approach was used.

All of the tests are South African measures, and there is no normative standard in the analysis of the test results. The tests are ‘ipsative’, in other words the responses are not measured against a population; rather they are individualised according to the learner’s answers.

Administration and reports

The assessments were administered on paper. Objectiva then analysed the results, and produced a report for each individual learner which included the following:

- **Biographical details**
- **An executive summary**
- **Background information**
- **Academic performance** according to Grade 11 final report.
- **Personality assessment** giving information about the JPQ and highlighting which areas apply more to each learner, and where learners may be on the continuum. (Feedback should emphasise these as tendencies, not boxes. These will be linked to potential careers.)
- **Interest assessment** based on the SAVII, what they actually want to pursue in terms of seven dimensions, namely Practical-Realistic; Scientific-Investigative, Artistic, Social, Enterprising, Conventional. Learner's get a three-letter code of their strongest interests in combination. Learner's marks are taken into account when linking the code to potential careers.
- **Career development questionnaire** – this covers self-information (values about life roles, work, occupational interests); decision making (effective); career information (scope of knowledge in relation to work); Integration of self-information and career information (ability to combine relevant information); career planning (ability to plan ahead and put into practise).
- **Final set of recommendations** with links (gostudy.net); career action plan for downloading and can create a plan using a template (Objectiva website); REAP accredited information and programmes with a variety of options.

Results and feedback

This late implementation meant that psychometric assessment results were only available from January 2021. The plan for Objectiva to run group in-person feedback sessions with learners was again disrupted by COVID19-related restrictions, and on-line group engagement was not thought to be feasible. Objectiva therefore handed comprehensive reports to REAP to provide feedback to individual learners and guide them through the recommendations.

Part-time mentors employed by REAP used these reports to conduct telephonic feedback sessions with individual learners. There was a sense from some REAP staff that the mentors did not sufficiently understand the personality types in order to give valuable and meaningful feedback to learners, however.

Learners who had applied for PSET were prioritised to ensure that they were at least registering for appropriate courses. As the post-school institutions recommended in the learners' assessment reports were aligned with those at which REAP supports students, the options were realistic potential pathways for REAP's support.

Summary of process

	Recruit interested learners	REAP staff
	Sign up interested learners with consent forms and collect academic reports	REAP staff & Objectiva
	Administer tests	Objectiva
	Analyse tests	Objectiva
	Compile individual reports	Objectiva
	Send reports to REAP	Objectiva
	Communicate results to learners	REAP mentors

2021 PROCESS

Timing and attendance

2021 was the first year that learners in both Grade 11 and Grade 12 participated in the PSRP – and psychometric tests were made available to the first 50 learners in each grade to express an interest.

COVID19 restrictions again required that REAP adapt its planning and implementation of programmes. Although testing was scheduled for 5-9 July 2021 (after learners had finished writing exams and while teachers would be engaged in marking), another lockdown was announced and schools were closed from 5 July. REAP subsequently experienced funding problems as the donor covering the costs of this work withdrew. REAP only managed to secure further funding in August and proceeded with negotiations with schools for new implementation dates.

In July 2021², REAP hired psychologist Emanuel Dubula as a full-time staff member to administer psychometric tests, among other things.

² Emanuel worked for REAP for seven months – he left end January 2022.

The assessments

From 15 to 18 August 2021 Emanuel administered the following three professional tests online with Grade 11 and 12 learners:

Personality Assessment	Jung Personality Questionnaire (JPQ)
Interest Assessment	South-African Vocational Interest Inventory (SAVII)
Career Readiness Assessment	Career Development Questionnaire

They were conducted with 58 learners in each grade as more learners than had indicated interest arrived and were not turned away.

School name	Number of learners assessed 2021	
	Grade 11	Grade 12
Kuilsville High School	15	22
Danielskuil High School	0	0
Blinkklip High School	22	13
Ratang Thuto High School	21	23
TOTAL	58	58

Matching school results with career options - Gradesmatch

In 2021, REAP also commissioned Gradesmatch to work with Grade 11 and 12 learners.

'Gradesmatch is a comprehensive career guidance technology that assists learners in Africa with career planning to unlock their potential. The technology is designed to map career data to learners, teachers and mentors, assisting in making well-informed good career decisions to improve long-term education and career outcomes.

*'Our main goal is to provide good quality career guidance to every learner in Africa, enabling them to easily navigate through the complexity of understanding career pathways from education to employment. We achieve this by [among others] assisting high school learners to match their grades to opportunities for further education.'*³

In 2021, they matched the Grade 12s' results obtained in Grade 11 with their desired PSET choices. This information complemented the psychometric assessments with ideas for actual career options. Gradesmatch also submitted applications to NSFAS and possible PSET institutions.

³ <https://www.gradesmatch.co.za/info/about-us>

The fact that learners can access Gradesmatch on their phones is thought to allow them to make their own decisions, whether they do what is recommended or continue with what they wanted to do and believed in. The options it provides to learners are valuable (Katlego, REAP).

Snags

- To register learners on Gradesmatch – and assist them to apply for NSFAS and PSET - Gradesmatch depends on learners to provide the documents required namely Grade 11 results, proof of address and proof of income, the latter two being not always easy to access given the structure of some households.
- In addition if a learner has already applied to NSFAS and obtained an ID on the NSFAS database, Gradesmatch cannot produce a duplicate ID – so cannot upload them onto their system.

Integrated feedback

REAP employed a number of ‘career guidance’ officers in later 2021 to provide the feedback to learners. Most were psychology graduates who had provided career guidance for UNISA on a contract basis. Together with REAP staff they provided individual telephonic consultations to give learners integrated feedback and assist learners to explore their options.

2022 PROCESS

In 2022, implementation of the PSRP was planned for early April. As only the learners who were part of the Grade 11 programme in 2021 were included, no psychometric testing was done in 2022 as they had already been tested.

Conclusion

While Objectiva’s reports provided additional links, options, and tools in order to assist in planning pathways, setting goals and creating a plan, psychometric testing cannot be a standalone process. REAP has already started integrating the learners’ assessments reports with information from Gradesmatch. This increasingly holistic approach consistently comes up as best practice for career guidance in the research.

An area to which REAP has started paying attention is improvement of the feedback mechanisms to students.

That being said, REAP needs to decide if psychometric testing is the most cost-efficient and effective way of providing information about choices. The survey of Grade 12s in 2020 – and, more importantly, 2021 – undertaken for this review asked about the value of various aspects of the PSRP, including psychometric testing. If it is deemed valuable to probe more deeply with those who were tested, this could be done in 2023.

COST OF PSYCHOMETRIC TESTING

The total cost of assessing 182 learners was R191,049 – being an average of R1,350 per learner. This was

- R793 a learner in 2020; and
- R1,185 a learner in 2021.

The 2020 feedback comprised only the psychometric test results whereas in 2021 the more integrated process included the Gradesmatch findings.

When & who	What	Unit costing	Total cost
2020 Objectiva and REAP staff	Admin and analysis of tests	R500 per learner x 66 tests	R33,000
	Feedback (integrated into REAP's interview for PSET application suitability)	⁴ 2 Student Dev Advisors - 20% for two months @ R24,194 per month	R19,355
	TOTAL		R52,355
2021 REAP psychometrist and temp employees	Costs of accessing accredited tests ⁵	R60,50 per learner x 116 learners	R7,018
	Test manuals ⁶	JPQ – R466,06 SAVII – R461,08 CDQ – R434,99	R1,362
	Salary of staff member (Emanuel) to administer and analyse test	6 months @ R29,377 per month (notionally 50% spent on assessment)	R88,131
	Labour cost of feedback	Temp staff 'career guidance' (Oct 21 – Feb 22)	R19,821
		Student Dev Advisor - 30% for three months @ R24,194 per month	R21,177
	TOTAL		= R137,509

⁴ Notional estimations of time spent by REAP staff have been included.

⁵ Accessed through Mindconnect.

⁶ Accessed through Mindconnect.

VALUE OF PSYCHOMETRIC TESTING

THE CONTEXT

In a recent article, Zamandlovu et al. (2021) outlines why any kind of career guidance intervention is important for young South Africans. Their study claims high tertiary institution dropout rates are partly because 52% of learners made career selections after Grade 12, 34% making choices at the point of registration. 12,5% say that not having career advice at the right time means they made the wrong choices. The consequent mismatches have personal, familial, and economic impacts.

Zamandlovu et al. (2021) also point out that many learners in rural areas don't have family or associated networks to assist them in thinking through their options; in addition historical legacies of inequality and access feed into limited exposure and knowledge.

They note that Life Orientation (LO) teachers, specifically in rural schools, lack expertise and experience in career guidance. Upskilling of LO teachers, as well as bringing in private companies, have been some approaches to try to address this.

Psychometric tests are often included as part of career guidance. As Bryan (Objectiva) puts it:

'Career advising is a highly adaptable and dynamic process, and when selecting the tests, it's really about gathering as many resources as possible and equipping the students with the most valuable information possible so that they can make informed decisions.'

THE BASICS OF PSYCHOMETRICS

A psychometric test is a 'sample of behaviour gathered under standardised conditions with clearly defined rules for scoring the sample, with a view to describing current behaviour or to predicting future behaviour' (Moerdyk, 2009, p. 270). Psychological assessment 'is the larger social process by which a test is administered, interpreted, and used to render a decision'.¹

Legally, a registered professional is required to administer and analyse the tests, and formal parental consent for learners is required.

There are four kinds of tests mentioned in the literature and by practitioners:

- **aptitude tests** which measure abilities in particular areas (verbal expression, mathematical ability etc.);
- **personality tests** which draw on normative typologies of characters in career guidance linked to particular career domains which are often outdated, and/or foreign to the local context;
- **values tests** which look at what is important to the person being tested; and
- **interests** which in this context are also linked to particular careers.

There are different opinions as to when learners should complete tests.

- Some argue for **Grade 9** to assist in subject choice and open up options; others argue: “only 10% of Grade 9 know what they want to do”. The point is to ensure the choices they make offer many pathways.
- **Grade 10** is seen as a year when learners are “not really paying attention”.
- In **Grade 12** learners are under too much pressure, which seems to make the ‘sweet spot’ **Grade 11**, according to Margeaux (SCI-BONO).

Hilde Hay argues strongly against Grade 9 psychometric testing:

‘I believe that formal assessments for career guidance should happen as late as possible – not before Grade 11 or 12’,

- and Ingrid (Future Sketch) adds that only the aptitude tests may be useful in Grade 9. However Bryan (Objectiva) noted that the aptitude tests may often reflect results for subjects, and so using a report card may be enough of an indicator of where learners’ strengths lie. If a learner is uncertain, that would be a cause to do a test (Ingrid, Future Sketch).

BENEFITS AND DRAWBACKS OF PSYCHOMETRIC TESTING

Much of the literature regarding psychometric testing is geared toward university students rather than high school learners. While the full literature review is available in Appendix B, the important elements for REAP are summarised here, in conjunction with insights from key informants and ‘grey’ literature.

Benefits of psychometric tests include:

- Employing the right psychometric tests can help learners in their studies and career options.
- They can assist learners to find 'the right fit' for study and work/career, and this translates into more productive and satisfied work later in life.
- Having psychometric testing often results in people staying in their field of study, in other words, they are more certain of their course of study and career choices (Andrew, SS4LS).
- Familiarity with psychometric testing can be an advantage in applying for jobs where psychometric tests are used as a measure for 'fit' in organisations.
- Tests may help confirm information about cognitive skills and aptitudes, as well as uncovering underlying potential.
- Tests gather a lot of information quickly that may take months to uncover through verbal interactions.
- They are 'objective' (though it can be argued that the interpretation of results is subjective).
- They are tried and tested methodologies with high rates of reliability, according to the experts.
- They are efficient tools that save time, energy, and resources.
- They are reliable and credible.
- They identify strengths and weaknesses.
- Doing the tests provokes important self-reflection, fostering intrinsic motivation.
- Having the right information is important for personal career development, educational and occupational decisions, and can motivate learners to finish high school.
- Testing can expand participants' ideas about what is possible.
- Related to this, they can help motivate a learner in their studies and create a sense of ownership regarding their choices (Andrew, SS4LS).
- Doing the tests can cultivate an interest in pursuing greater achievement and clearer career paths after they graduate from school.
- Having the 'right' career choice promotes satisfaction and productivity.
- Psychometric tests provide information for ongoing monitoring and evaluation.
- They provide holistic psychological profiling – more than meets the eye.

Drawbacks of psychometric tests include:

- They need to be done by someone who understands their purpose and can use the data to help guide learners in their life and career choices.
- Culture influences psychometric assessments, and where and how the tools are developed matters.
- Related to this, the majority of tests used in the local industry are based on foreign and/or outdated models and therefore are not suitable for current learners in REAP's scope of operations.
- Outdated and foreign career matching to interests and personality can result in career advice that is not useful for learners or that is not contextually relevant.
- In REAP's context (as in many other contexts working with young South African), language is important; nuance in questions may be lost or questions may contain unfamiliar elements or words. It is not always possible to translate, change words to fit context without losing the purpose of the question.
- There is an 'expertise bias' - that learners may feel they are supposed to follow the results of psychometric tests as it constitutes 'expert advice' even though it does not match with their own interests, aspirations and aptitudes (Ingrid, Future Sketch; Marguerite, Balance your Life).
- It can result in 'boxing' someone into a label that they then start to fulfil, while their experience exists on a continuum – for example the expression of 'introversion' may differ with context.
- 'Matches' between personalities and careers may box learners and shut down options rather than open up areas for exploration, especially if tests are done without a skilled practitioner to interpret results.
- The tests cannot catch people's full complexity – often there may be more than one answer to a question that 'suits' you.
- The results will not be useful if used with someone is too young, or doesn't have a high level of self-awareness, or who answers what they think 'should' be the answer rather than being brutally honest, (e.g. saying you like working with children when you don't, or have no idea because you think that is the socially acceptable response).
- Related to this, assessment may be harmful if these are done with someone who isn't ready.
- The results can be confusing especially if there is no expert to assist in interpreting and drawing conclusions.
- Tests can be time consuming, and since most tests operate under license, they can be expensive to use.

BEST PRACTICE

Key informants had useful insights on using psychometric testing. As noted by Marguerite (Balance your Life):

*'Using psychometric tests is like taking someone's temperature: seeing it is 40 degrees, and then without looking for any other symptoms, declaring a person has COVID-19. The other symptoms like coughs, runny nose or whatever else aren't even considered. So the chances of a misdiagnosis are huge. Likewise psychometric tests are **only useful in the hands of someone who knows how to interpret them and use other information to make a holistic assessment and provide the right kind of information and options.**' (our emphasis) (Marguerite, Balance your Life).*

Tests are best used in 'suites' – using a range rather than focusing on one type. These should be complemented by school-based assessments, school results and other information to **build an holistic picture** that is used in conversation to explore options with learners, rather than predict outcomes and ask learners to work toward these. The choices made for which tests to use should be based on the desired outcomes of the intervention.

When **administering the tests, preparing learners fully**, stressing the importance of being honest, of going with 'gut' responses and not overthinking is important in order to provide meaningful and accurate results (Marguerite, Balance your Life).

Feedback and how this happens is very important. Many key informants spoke about either the gap in feedback as a drawback in their models, or about the importance of having someone who knows what they are doing to work with learners to interpret their results in relation to other information.

Best practice is to **use test results along with interest and desires of learners** to assist in plotting pathways. For example, if someone has not done well in mathematics, but is interested in a specific BCom programme, to work with that learner to get them to study in the business field, perhaps with a higher certificate, building into a BAdmin, and then moving into a BCom. **Knowledge of context and potential options is invaluable** (Andrew, SS4LS).

While interests of learners are more important than academic/school results, **boundaries need to be taken into account** if something is not realistic (e.g. wanting to study medicine without Biology as a subject choice) (Andrew, SS4LS). The knowledge of options, and pathways for all forms of PSET is invaluable in being able to assist learners in making choices (all key informants mentioned this). If people don't have the information to hand, they should know where to get it.

The overall assessment by many key informants is that tests have their place but should be used with caution, by informed and skilled administrators, in collaboration with other information, and with knowledge of their drawbacks.

ALTERNATIVE APPROACHES AND INTERVENTIONS

The range of interventions suggested below are not intended to operate in isolation, but, as with psychometric tests, are intended as part of a broader set of engagements that work together to build toward engagements that foster career thinking and conversations for guidance.

DOTS

A potential overarching model that could be drawn on and/or adapted is the DOTS - or more updated SODiT - framework.

DOTS stands for:

- Decisions – what decision-making skills do they have?
- Opportunities – what opportunities are they aware of?
- Transitions – what skills do they have for making successful transitions?
- Self – where are they now?

SODiT is a tool-based adaptation of DOTS where the four elements work as follows (quoted directly from marcr.net):

1. ***Self-awareness: exploration of the client's***
 - a. *Strengths, aptitudes, qualifications and qualities*
 - b. *Limitations*
 - c. *Personal needs, aspirations, and values*

2. **Opportunity awareness:** supporting the client to find out about
 - a. The general structure of the world of work
 - b. The range of opportunities within it
 - c. The demands that they will make
 - d. Rewards and satisfaction they can offer
3. **Decision learning**
 - a. Helping clients understand the different ways in which decisions are made, different decision-making styles
 - b. Finding out with the client what factors are at play and helping them explore and develop skills that will enable good decision making
 - c. Assisting clients in taking responsibility for decision making
4. **Transition learning**
 - a. Helping clients gain the awareness and skills needed for making good transitions. This could mean helping them gain awareness of the differences between two environments (education – post-education for instance) or help them relate what they learn and already know to what they will need or can use later.

Important caveats were added to this model in the 1990s:

'It is important to take account of the changing labour economy and the strong and often conflicting pressures in the lives of young people and children, as well as the resulting feelings and social attachments; individuals must be seen in the context of a social world. Decisions and problems have to be set in this broader context with a particular focus on the importance of values and responsibilities.'

How people engage with this process is suggested through a model which includes four stages of learning, where stories and feelings are used to move from learning to intended action (again, quoted directly from marcr.net):

1. *Sending (Se): getting a picture of the way things appear including:*
 - a. Learning about self – inner learning
 - b. Learning about the world – outer learning
2. *Sifting (Si): organising a version of the way things are – developing a deeper sense of what is learnt – making information usable.*
3. *Focusing (F): becoming alert to the way things feel – making a mental map of how everything you found stands in relation to each other.*
4. *Understanding (u): developing an account of the way things work – developing critical awareness, explaining effects, anticipating consequences, supporting an account of intended action.*

The model suggests an approach which could be built holistically in order to do the work of career guidance – with, or without, incorporating psychometric testing and using some or all of the alternative ideas presented below.

GROUP-BASED INTERVENTIONS

Andrew (Sports Skills for Life Skills – SS4LS) uses psychometric-type quizzes in group settings with high school learners. SCI-BONO does similar engagements with quizzes and self-assessment combined with large group feedback, as does Young Aspiring Thinkers using Holland Code based tests.

SS4LS uses these group interventions as part of their schools' programme. This kind of awareness-building is open to all learners, while those who become part of the programme then have further formal psychometric testing done.

SS4LS focuses on personality and career quizzes, running a workshop with 20-30 students who do an MBTI quiz and self-assess using rubrics. Learners are split into groups depending on major components of types (e.g. introvert and extroverts) with reading materials they need in order to present to the big group, including the kinds of work environments that suit particular temperaments. In some cases, a Value Scale quiz is also used. The purpose is to build self-awareness and get learners exposed to different ways of thinking.

Andrew is interested in using the tests in order to broaden the views of learners. This is especially the case when there are limited career opportunities and role models in learners' environments.

EXERCISES FOR BUILDING SELF-AWARENESS

Building self-awareness programmes of different kinds could be tailored to be part of Life Orientation classes or external workshops or interventions.

Some self-awareness exercises suggested by Marguerite (Balance Your Life) are as follows:

- Over the course of a week or longer, each night keep a record of
 - one thing that you did that day that **made you feel good about yourself**; and
 - one thing that **made you really uncomfortable**.

These can be as simple as 'I helped my mother to wash the dishes'. The point is to discuss this with learner about the patterns that emerge – like a sense of achievement when you get things right.

- Another option is **tracking strengths and weaknesses** - strengths defined as the things that makes you feel strong having done it, weakness something that makes you feel pap having done it. For example, while you are good at playing a musical instrument, it saps your energy. Just because you are good, it doesn't mean it's a strength. Good interactions with people may bring you strength. Over the course of the week, you can again start picking up patterns.

CAREER EXPOSURE & ROLE MODELLING

Using either career fairs or career talks, exposing learners to a variety of career options, jobs and job prospects on a regular basis has been demonstrated to have a beneficial impact on learners' potential (Zamandlovu et al., 2021).

Studies have also shown that there is a positive correlation between school-sponsored career talks with external presenters and the participants' predicted income when they are 26 years old - with a higher impact for 14–15-year-olds than 15-16-year-olds. In addition, one to three career talks create no discernable impact, whereas 15 to 30 talks are connected with higher compensation later in life. In other words, a frequent range of external speakers talking about options is ideal (Zamandlovu et al., 2021).

It is important that speakers are primed properly (Ingrid, Futuresketch), and that they include some of their own biographical backgrounds (where they grew up, circumstances while growing up, and how they used education as a catalyst to change their lives and those of their families) (Zamandlovu et al., 2021). It is also vital to include the varied pathways people have taken to get to their current career and the fact that these journeys are not linear (Ingrid, Future Sketch; Monewa, YAT).

Young Aspiring Thinkers (YAT) uses a career exposure event using an adapted 'speed mentoring' model drawing on the concept of speed dating where four to five learners circulate across at least 25-30 people with a wide variety of jobs. Each session is carefully curated to include different sectors, different levels of educational requirements, non-university options and different fields. Many of the people who participate also sign up as mentors, so learners can have an option of booking a longer 35–40 minute conversation with people who particularly spark their interest through YAT's on-line platform.

The information from these talks is also viewed as more reliable and detailed than information gained from teachers, parents and friends which assists making 'the right' choices.

'Research shows that the more career information someone has, the higher his or her career expectations will be.' (Zamandlovu et al., 2021).

In addition to providing career exposure, having this kind of personal interaction provides learners with access to role models. As Zamandlovu et al (2021) note:

'Given the lack of career role models, many learners in disadvantaged communities are faced with difficult issues such as dropping out of school, teenage pregnancy, or hopelessness which, unattended, can lead to suicide. Many abandon their education or stop pursuing a career due to low self-efficacy. For that reason, role models are important, as they can have a substantial influence on learners' self-efficacy which, in turn, can affect their career development. Speakers serve as role models.'

If role models share identity markers of race and gender with learners, this is particularly effective; it is even better if they come from the same community.

REAP has a cohort of alumni, staff members and connections in the spaces in which the organisation works. REAP-supported university and TVET students are all required to do community service, many of whom elect to go back to their high schools to talk to learners about their 'journey to tertiary'. Some REAP staff and alumni have created video content about their experiences of post-school education and the world of work – which is used in the PSRP curriculum.

These kinds of interactions can also demystify pathways and choice making about how people follow multiple and different paths to get to their careers. They can also show the different motivators people have used for choosing a career other than money. It is advisable to get input from learners ahead of engagements regarding which kind of careers they want to find out about (Zamandlovu et al., 2021).

Some of the on-line platforms (like gostudy.net) have videos of various career options and stories about pathways to which Grade 9 learners making subject choices could be exposed. A big drawback is that many of these are not local, however, and being able to identify with the people speaking is important. Ingrid (Future Sketch) brainstormed potential case studies and/or short videos that could be curated and used in some way.

LEARNING ACTIVITIES

Though not explored in detail, Ingrid (Future Sketch) had ideas about getting learners involved in creating a project or organising an event as a way of getting exposure and gaining skills. This correlates in some ways to the SDG entrepreneurial programme that YAT runs with some of the learners with whom they work. Over four years, learners are required to produce a social entrepreneurship idea; then, with guidance from market experts, they must develop this idea to presentation and feasibility stages as well as provide pitching opportunities for funding.

Ingrid (Future Sketch) also suggested engaged and focused learning using something like leadership skills development-oriented camps. She mentioned the importance of engagement in both formal and informal ways and the kind of difference these can make to learners. This correlates strongly with recent findings from a post-school skills development programme where participants rated as some of the most impactful and beneficial parts of their training process the camps that dealt with gender, and diversity more broadly, as well as Wilderness purpose finding retreats (PYDA 10-year Impact, Evaluate, Celebrate report, 2022).

ACCESS TO GOOD, CLEAR, AND COMPREHENSIVE INFORMATION

Across every practitioner and approach, good, clear, and comprehensive information is the key.

In addition to being able to decode institutional jargon, there has to be a big knowledge base from which advisors draw that includes:

- School information – required and available subjects.
- Contextual information – required skills both locally and nationally that would lead to employment.
- PSET options including alternative pathways to ‘big’ or currently unrealistic career options (Ingrid has a booklet in hardcopy that does this kind of step to step from ‘lower’ to ‘high’ options).
- Information about how institutions operate (many learners don’t know the difference between undergraduate and postgraduate, for example), and translation of jargon (Ingrid has resources).

PROMOTING PLANNING FOR OPTIONS

Young Aspiring Thinkers promotes a practice with the learners with whom they work which entails researching and planning for at least three options, both in terms of institutions (including a range of universities, technical institutions, TVET and alternatives) as well as fields of study (Monewa, YAT).

This correlates well with the sense of best practice emerging from psychometric and other career advice options that promote flexibility and adaptability for learners, moving away from 'fixed path' thinking. It also takes into account the reality that many learners may not get into their institution of choice because of high application numbers and capacity issues.

PARTNERSHIPS AND PROCESSES

Aside from organisations working with school partners, REAP has the possibility of working with existing programmes and institutions to design and implement an holistic intervention with learners.

In relation to schools, an obvious option would be to align the programme with the formal Life Orientation curriculum and be able to provide material that assists the school in fulfilling their requirements.

REAP could design and provide this internally, drawing on relationships and information including the following:

- Ingrid at Future Sketch who has designed interventions, and has existing resources that can assist in training mentors to have conversations with learners that open up their options from Grade 9 onward.
- Andrew at Sports Skills for Life Skills who has group-based interventions and tools adapted from MBTI that he may be willing to share and train REAP staff in his approach.
- Working with institutions – for example Young Aspiring Thinkers partners with TUT to provide study option advice; and Stellenbosch University has a programme that assists in providing career guidance for learners.
- Monewa at Young Aspiring Thinkers has ideas and experience in thinking innovatively, partnering widely in ways that mobilise funding, has a wide network of mentors in a variety of industries that may be either a model/resource to work with in developing a career exposure/role-modelling programme for REAP.

CONCLUSIONS AND RECOMMENDATIONS

These conclusions and recommendations were developed by REAP's Emma Francis and lead researcher Penny Morrell, following a review of this research. This was not part of the researcher's commissioned task.

1. The first question to be addressed is **whether or not REAP should continue to include psychometric assessment in its suite of offerings** aimed to inform and assist learners in making choices about their post-school options.

The recommendation is that it does not do so, for a number of reasons:

- it is expensive;
- the reports are not sufficiently customised for each student; and
- other tools could be as useful to help people along their career journey.

In the survey responses, students did not rate psychometric assessment as important.

The overall assessment by many key informants is that tests have their place but should be used with caution, by informed and skilled administrators, in collaboration with other information, and with knowledge of their drawbacks.

2. The subsequent question, then, is **what is to be done?** How else can information about subject and career/work choices be made available?
 - 2.1 Ensure that the **REAP staff member** who is scheduled to be recruited and located in the Northern Cape is **an educational psychologist** who can lead this post-school planning work as well as participate in implementation of workshop sessions and organise career fairs etc.
 - 2.2 **Start early - in Grade 9** (see associated sub-report on assisting with subject choice in Grade 9). Frequent comments have been that starting in Grade 10 is too late.
 - 2.3 **Extend the existing PSRP workshop curriculum to include various post-school planning exercises and tools.**
 - Some are already embedded in the programme e.g. goal setting, opportunity awareness, bridging school and post-school (which includes self-awareness).
 - Self-awareness (which was addressed though the psychometric testing) requires particular attention however. This comprises strengths, aptitudes, qualifications and qualities, limitations, personal needs, aspirations and values.

3. Adopt an holistic approach

- Adopt an approach that guides learners to 'fields' of interest and enjoyment, rather than box them into ideas a 'career'. Keep their options open.
- Provide reality checks and boundaries where school results clearly indicate that an option is improbable.
- Ensure there is multiple exposure to career options (15-30!); one to three exposures are not helpful. This should include career fairs.
- Continue to include Gradesmatch in the mix – such that past results can guide and shape desired fields and learners can access detailed information about study options and careers

4. Employ a variety of tools and exercises

- Group exercises about interests and options and can be really useful. Use psychometric-type quizzes in group settings; or quizzes and self-assessment combined with large group feedback.
- Co-operate with other organisations doing this work with groups e.g. SS4LS.
- Arrange career talks with external presenters - apparently most impactful for 14–15-year-olds. Try to choose external presenters 'like them'; ask them to describe their backgrounds and varied pathways they have taken to getting somewhere.
- Ensure advisors have a broad knowledge of options and pathways for all forms of PSET, including
 - School information – required and available subjects.
 - Contextual information – required skills both locally and nationally that would lead to employment.
 - PSET options including alternative pathways to 'big' or currently unrealistic career options.
 - Information about how institutions operate (many learners don't know the difference between undergraduate and postgraduate, for example), and translation of jargon (Ingrid has resources).
- Compile a list of suitable on-line platforms with local resources – though include non-local resources (like gostudy.net) where necessary.

OTHER USEFUL INFORMATION

Though not specifically required in the scope of research, some examples of resources REAP may find useful are as follows

Sports Skills for Life Skills has partnered with **Saylor Academy** and **Coursera** for their beneficiaries to access their on-line training programmes free of charge. They require beneficiaries to complete particular courses (e.g. College Success for Students going to University which include time management and career interests). These are beneficial as no internal resources are required to conduct training, beneficiaries have to complete on-line assessments to get certificates indicating a higher level of understanding and retention than can be guaranteed in a workshop. They also offer many personal development courses.

SAYes Mentoring has a **resource handbook** they update annually with bursaries and funding options across a range of careers.

PACE Career Centre offers accredited training for career guidance practitioners – though Ingrid is skeptical that this can qualify a person as a career guidance practitioner, suggesting rather that they name the process ‘PSET options conversations’.

Ingrid at Future Sketch has specific resources that she has developed that assist mentors in thinking about PSET guidance conversations. She also has developed a ‘pathway’ modelling resource that shows different ways you could achieve a particular career. She also has resources that help to translate higher education jargon for people to understand the landscape and options better.

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APPENDIX A: LIST OF EXPERTS CONSULTED

NAME	ORGANISATION	ROLE/DESCRIPTION
ANDREW DELLIS	SAYES MENTORING	OPERATIONS DIRECTOR
JONATHAN HOFFENBERG	THE PARENT CENTRE	SOCIAL WORKER, EDUCATION SPECIALIST (FORMERLY SHAWCO AND UCT FACULTY OF HUMANITIES SCHOOL AND COMMUNITY LIAISON OFFICER)
CINDY MKAZA	EMAGQABINI EDUCATION ACADEMY NPC	PROGRAMME OFFICER (FOUNDER)
ZUKILE KESWA	IKAMVA YOUTH	YEAR BEYOND SCHOOL CO-ORDINATOR
MARGUERITE STEPPE	BALANCE YOUR LIFE	EDUCATION & CAREER COACH
ASHLEIGH SEALS	SUSTAINABILITY INSTITUTE	YOUTH & COMMUNITY CO-ORDINATOR
BRYAN VAN DER HARST	OBJECTIVA	PSYCHOLOGICAL ASSESSMENT SPECIALIST / DIRECTOR
ZOE MANN	THE LEARNING TRUST	PROGRAMME DIRECTOR
INGRID VAN DER MERWE	FUTURE SKETCH	INDEPENDENT CAREERS ADVISOR
ROBYN PRITCHARD	REAP	REGIONAL CO-ORDINATOR
KATLEGO KGAILE	REAP	SCHOOLS PROGRAMME OFFICER
MARGEUX GROENEWALD	SCI-BONO	RESIDENT PSYCHOMETRIST – CAREER CENTRE
ANDREW GREENWOOD	SPORTS SKILLS FOR LIFE SKILLS	ACADEMIC MANAGER
MONEWA MATLWA	YOUNG ASPIRING THINKERS	CO-FOUNDER & CEO

APPENDIX B: FULL LITERATURE REVIEW

The value of psychometric testing for career and study choices

South Africa is in transitional stages that will determine the future of the nation. Moving towards the status of a developed nation, socio-economic transformation is essential to being more globally competitive.

The country's economy has transformed from an agriculture economy to a manufacturing sector which continues to occupy significant shares of the South African economy². Among the key sectors that contribute to the gross domestic product and keep the economic engine running are retail, financial services, communications, mining, agriculture, and tourism. As elsewhere, South Africa is moving towards becoming a knowledge-based economy with a greater focus on technology, e-commerce and financial and other services³. The knowledge-based economy is being driven by ICT and associated new business models. This renders many existing business models obsolete; they are not able to grow, let alone survive as it is not possible to achieve one without the other.

Psychometric testing in access to higher education

Much of the literature surrounding psychometric assessments is geared toward tertiary education at universities, and so the research needs to be read in this context.

Applications to higher education have increased since 1994 such that universities are increasingly selecting students based on their predicted academic performance⁸. By default this makes students' success a strategic priority for institutions of higher education as this not only enhances their reputation but also increases funding¹⁰. In order to ensure these, institutions need to select applicants who are most likely to succeed.

A range of arguments and evidence suggests that there is a lack of an appropriate cognitive selection battery that predicts academic performance thus leaving universities to simply select students who are appropriately qualified for a specific programme¹¹. Identifying the best predictors of academic performance is, therefore extremely important as a metric to evaluate the effectiveness and likely completion of tertiary education. Milner et al. argue that psychological assessment instruments can play a role, either in organisational transformation or in maintaining the status quo.

Researchers^{12,13,14} contend that selection of students who have the ability to succeed in tertiary education improves when the drivers of student performance are known. The argument is that paying attention to the type of psychological assessments used in the

selection process and the instruments used for selection may assist in students' academic success and career⁶.

Psychometric assessments aim to determine an individual's suitability for a role based on the essential cognitive skills and personality characteristics; they provide crucial insights into a person's cognitive ability and reveals their underlying potential¹⁸. This enable institutions and organisations to foresee behaviour before enrolment or recruitment, enabling them to understand individuals' factors which systematically affect the status or performance of the institution/ organization.

However, in countries like South Africa, cultural fairness would also influence psychometric assessment in the context of career or study choices¹¹. As such psychological testing needs to meet stringent psychometric standards and cater for all age groups in this multi-cultural society and should comply with all the legal imperatives that regulates psychological testing.

Psychometric assessments that predict academic performance

Numerous assessments have been introduced into the market. Some institutions make use of a battery of cognitive tests; namely the APIL (learning potential assessment), as well as the Critical Reasoning Test Battery (CRTB) which includes Numerical and Verbal Reasoning Tests.

Du Plessis's study³⁰ found that a dynamic intellectual measure was able to demonstrate utility in predicting the future academic performance of the sampled first year university students - and consequently has the ability to predict performance in a manner that has significant benefit over the traditionally employed assessments.

On the other hand, Schaap and Luwes³¹ provided further supporting evidence in their study where a cognitive ability test similar to that of the APIL, the Learning Potential Computerized Adaptive Test (LPCAT), found cognitive ability to be a statistically significant predictor of future academic performance of students. A doctoral dissertation by Mafani³² conducted at the Nelson Mandela Metropolitan University also proved that there is a significant correlation between psychometric testing and academic performance in the selection of students registered for an MBA programme.

Maloa and Bux¹¹ research findings indicate that cognitive tests for prediction of academic performance should be considered together with the application of the Fit theory in order to achieve an effective method. It indicates the usefulness of the combination of the dynamic assessment approach and the practical fit theory in predicting academic performance. The argument is that the Fit theory¹² has potential to inform the compatibility within departmental contexts, institutional and disciplinary

culture, and the academic (or alternative) profession. Therefore, the psychological assessment of potential students should be able to include the fit theory with the dynamic assessment approach that would test the student's ability to learn from the environment.

More assessments³³ include, Locus of Control Inventory (Schepers, 1999), Learning Potential Computerized Adaptive Test (De Beer, 2011), Cognitive Process Profile (Prinsloo, 1995), Career Interest Profile (Maree, 2010), and the Basic Traits Inventory (Taylor & De Bruin, 2006). These assessments were all locally developed and considered the South African context in their development. The development of the South African Personality Inventory (SAPI) began in 2005. The SAPI was conceptualised in order to address the need for an indigenous South African personality assessment. Currently, South African psychological testing is focused on cross-cultural issues. Many assessments have been or are being adapted and standardised in South Africa. New adaptation techniques allow local psychologists more leeway in the construction and adaptation of items for the diverse South African population.

Psychometric tests' role in access to work

As psychometric tests can take on a gatekeeping role they can be a key determinant of access to both employment opportunities as well as career mobility¹⁷. This is particularly the case in the contemporary world where making predictions is essential, such as anticipating the climate, financial markets, and geopolitical twists. It bodes well that the academic and career prospects follow a similar pattern.

People are most likely to encounter psychometric testing as part of the recruitment or selection process because occupational psychometric tests are designed to provide employers with a reliable method of selecting the most suitable candidates¹⁹. For instance, companies such as Eskom, Anglo American, McDonalds, CitiBank, Sasfin have used psychometric assessment which indicates how some employers in some sectors are appreciating the value and need for psychometric assessment in the management of their organizations.

Holland²¹ states that if an individual is satisfied with their working environment, they will be a productive employee/ individual. So those who think about a successful and satisfying career need to understand themselves first, and the psychometric test can assist individuals to understand their preferred activities, work style, learn best ways of working with others, and manage conflicts¹⁹.

Career decisions affect many intertwined issues and have long-term effects on the individual's career satisfaction, well-being, and standard of living¹⁵. Individuals need to develop their career adaptability to be able to adjust to changes in the environment.

While many people remain satisfied with the choices they have made, others come to regret their career decision or consider a career change in light of the changes in the world of work or their own personal situation¹⁶. To help individuals make better decisions and decrease regret, it is important to understand the intricate process of career decision-making, that is that studying the relationship between cognitive tests and the academic performance of students is essential in ensuring success.

Psychometric assessments in strengthening educational and work choice outcomes

Based on the findings of Maloa and Bux (2015) psychometric testing has a role in the sustainability of human capital development. The purpose of introducing psychometric testing to the education system is to gather accurate descriptions of an individual and this information can be utilised to make a practical and realistic decisions regarding a student's strengths and weaknesses.

Psychometric assessments can provide accurate information on how well students learn, as well as the effectiveness of teaching. The information gathered through psychometric assessment is useful for teachers who can make intentional decisions to improve their instructional strategies and consequently are able to become effective teacher's and improve the processes of learning.

Aptitude

Besides exploring a student's career interest, the psychometric assessment also has an aptitude component. The aptitude test assesses high order thinking skills such as problem solving, mathematical reasoning, scientific reasoning and reading¹¹. This test can also be used to predict more global kinds of academic accomplishment such as problem solving and reasoning. All of these skills are important in order to strive and survive in the contemporary world where individuals need to sustain their competitiveness.

At any given age, individuals are likely to be at different stages in their learning and development, and to be progressing at different rates, but research ^{28,30,31} suggests that all learners are capable of making further progress given appropriate learning conditions that are challenging and supportive. New learning opportunities are likely to be most effective in promoting further learning if they take account of the learner's present knowledge, skills, and understandings. Learning objectives should tap into the learner's interests and motivation, should be consistent with what is known about the learner's preferred styles of learning; and if learning opportunities are provided in a supportive social²⁸.

An implication of this for schools is that teaching is likely to be most effective, if teachers first establish where individuals are in their learning, including their current knowledge, skills, understandings, and belief. According to Bransford, Brown and Cocking (2000), there is a considerable evidence that learning is enhanced when teacher's pay attention to the knowledge and belief that students bring to the learning processes, use this knowledge as a starting point for new instruction, and monitor changing conceptions as learning proceeds. In other words, effective education includes the ongoing monitoring of where individuals are in their learning and use of this knowledge to decide on starting points for further teaching and learning. Highly effective teaching depends on an understanding of individual learners, including their current knowledge, beliefs, misconceptions, incomplete understandings, and naive mental models, psychometric assessment is able to provide this information²⁷. Therefore, teachers with the help from school counsellors may use the information from the test to devise appropriate learning activities which are appropriate to student's characteristics in order to facilitate learning. Teachers who know that students have different interests, motivations and learning styles will understand that these differences influence what and how they learn.

The attempt to objectively measure aspects of mental ability helps school-based assessment to align personalities to career interests, with the assessment assessing skills that cannot be assessed by paper and pencil test. Not only is this valuable to the student but also to the career advisors to guide students to achieve their goals¹⁹.

Psychometric testing for career guidance

Psychometric assessment comprises three main components namely the aptitude test, skills test, and personality test¹⁹. The personality and skills tests have an important role in exploring students' career interests and helps them cultivate an interest in pursuing greater achievement and clear career paths after they graduate from school¹⁵.

Psychometric testing as part of the assessment system has expanded from measuring aptitude to career guidance purposes. As such, psychometric assessment is a tool to identify student's career interests. This information can be utilised by school counsellors and teachers to nurture this interest and simultaneously aid in the human capital development that can fit the contemporary world.

Career advisors and teachers need to build career knowledge and self-confidence of students by providing them with structured knowledge of the world of work which is inherently important for their future. For an individual, responding to the test or assessment enables them to recognise, and become aware of, their personality, values, interests, and achievements which results in a clearer vision of their capabilities and career path²⁰. The argument is that this provides the individual with high intrinsic

motivation to realise their ambition. In addition, students with a broad thinking frame are able to think and make viable future career plans based on what they can observe from the psychometric test. The more sophisticated understanding a student has of their personal career development, the better informed and better prepared they are to make educational and occupational decisions.

As psychometric tests assess career interests and aptitude, the ultimate benefit to a student completing the test is learning to understand their career interests. Career interest assessment helps students to express their likes and dislikes about a very wide range of work and other activities therefore providing information on student's career interests.

Lifespan development

There has been a movement towards a lifespan developmental conception of career behaviour, which resulted in several theorists describing career development in childhood²².

Super describes a growth stage (birth to 14 years) during which children become curious about the world around them which leads to fantasy occupational aspirations becoming increasingly realistic as children become aware of their interests and capabilities. The growth stage is characterised by the development of self-concept, attitudes, needs and general world of work and it is conceptualised as a vocational self-concept that develops through identification and to adult career roles²³. Similarly, Gottfredson believes that occupational aspirations represent children's attempts to realise their self-concept.

According to Akhurst and Mkhize²⁴, if children have little or no guidance on career development, they will have low aspirations to prepare for their future. The consequence of this is that most disadvantaged children have limited exposure to the world of work, to career education, to what universities and colleges provide educationally and to a wider range of social contacts and appropriate career role models. Thus, the personality and skills test of the psychometric assessment provides student guidance in identifying their career interests.

Self-awareness of interests and occupational information, particularly at exploration stage (Super 2020), can be used as a stimulus in career development. This is because, developing this way of thinking in students' minds creates organisation such that aims, and outcomes of the career are more advisable and completing high school is more likely²⁵. So, enhancing occupational thinking at an early stage is worth the effort to facilitate comprehensive career education. In this way psychometric tests can also aid in school improvement programmes.

Intrinsic motivation

Intrinsic motivation is the internal drive to master or accomplish tasks²⁶. Through intrinsic motivation students can experience achievement and a sense of self-worth which will assist them to internalise the connections between school and work. It is assumed that seeing meaning and purpose in learning and career interest, and gradually constructing the future, will prevent the disengagement process that leads to dropping out from high school²⁷.

Conclusion

Psychometric assessment should not be viewed from a narrow perspective, nor seen as an isolated educational activity. It is an essential element of teaching and learning and contributes towards the effectiveness of any school. Assessment is an ongoing process and an integral part of the educational experience of each child.

In addition, the information gathered through the test can be used by teachers to motivate students to learn. The improvement of learning in schools depends on an understanding of variation in students' level of development and achievement within the same grade; a willingness to monitor and report individual growth in an area of learning across their years at school; and a commitment to tailoring learning activities to students' interests and level of achievement regardless of their grade. School counsellors and teachers should work together as a team to provide suitable instruction for different students and advise students on their subject choices/ career path.

Furthermore, psychometric tests support the development of effective career preparation activities for students and have relevance for the policies that affect such practices. The results from psychometric tests can be utilised as a tool to create awareness of students on how future career planning can contribute to an increase in motivation of students to improve themselves in education.

However, studies also indicate that cultural fairness influences psychometric testing, particularly in the South African context. Cultural factors in psychological assessment provoke many strong opinions and can be highly controversial due to past discrimination, and the unfair and biased use of tests²⁸. As such psychological testing needs to meet stringent psychometric standards and cater for all age groups in the multi-cultural society; all testing should comply with all the legal imperatives that regulate psychological testing.